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ABSTRACT

A project was undertaken to identify, develop, and test the effectiveness of a limited number of self-contained, individual learning modules about consumer topics that are especially appropriate to a variety of industrial arts courses given in secondary schools in Texas. Included among the project activities were the following: (1) identification of appropriate content topics by a survey administered to a select sample of 49 teachers and administrators involved in industrial arts curriculum development in Texas; (2) development of a system of analysis to define content material within each topic in a consistent and meaningful way; (3) development of a format in which to present the modules; (4) field testing of a portion of the materials in two Texas school districts, using statistical comparisons and teacher reactions; and (5) dissemination of the materials to all school districts in the state. (The appendixes to this project report include project-developed rating and survey instruments as well as learning modules in English and Spanish dealing with energy efficiency, fire protection, hand tools, guarantees and warranties, protective clothing, power hand tools, and sandpaper and other abrasives.) (YLB)

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FINAL REPORT

Project No. 11230084

CONSUMER EDUCATION FOR TEXAS INDUSTRIAL ARTS

A Research Project in
Vocational Education

Conducted Under
Section 132 of Public Law 94-482

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June 30, 1981

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In keeping with our pledge not to identify specific students we would also like to acknowledge the help of these professionals who, as site coordinators, took the time and effort to find the students to participate. They include: Gilbert Steelhammer and Rolando Salinas in Austin, and to Daniel Jaime and John Windell in San Antonio. Special thanks also goes to the supervisors and coordinators who helped select sites for this project, including Robert Hafernik and Burlen Horton in San Antonio and Perry Suter in Austin.

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The result of the project should prove to be of considerable interest to researchers in Industrial Education and Guidance. The final report is to be distributed to Research Coordinating Units in each state and cross referenced in the ERIC system.

Appreciation is also extended to Industrial Education, the professional magazine for shakers and movers in the field. This magazine has promoted earlier research with its publications and has scheduled an article on this project.

the authors

CONSUMER EDUCATION
for
TEXAS INDUSTRIAL ARTS

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UNIT I

OBSERVATIONS AND PROBLEM DEFINITION

Industrial arts purports to teach students consumer education content as a regular and longstanding part of its program. Current societal needs point to the value of such content, particularly when presented in a bilingual format appropriate to the needs of Texas youth. No clear cut definition, however, stands to point to the common content for such needed materials. This project attempted to identify, develop and then test the effectiveness of a limited number of self contained, individual learning modules about consumer topics appropriate to a variety of industrial arts courses.

Background

Increased inflation has accentuated the need for individuals to use wise consumer practices in order to cope with the increased cost of living. The energy crises have intensified the need for consumers to be able to select and purchase products that conserve energy or utilize it more efficiently.

Today, too many individuals lack the technical background to make judgements concerning industrial goods and services which range from energy efficient devices for home use to small electronic appliances that are the products of both energy and manufacturing industries. The knowledge of industrial quality becomes essential to wisely select, or purchase the wide range of industrial products and services.

Industrial arts is an ideal subject for consumer education. It has traditionally sought to develop a wise consumer of industrial products. Goals defined for industrial arts from 1937 through the past several decades (Groneman & Hostetler, 1953; Minelli, 1968; and AIAA, 1976) have stressed this development.

The most recent of these, the 1976 AIAA guidelines, specifically address the issue: "...develop attitudes, individual involvement, and a realistic evaluation for consumer awareness. The student evaluates industrial products by judging the quality of construction, the selection of materials, and the fulfillment of function" (p. 14). While all of these guidelines have stressed the importance of developing consumer awareness and ability, they do not provide specific methods or content.

Although industrial arts has long included in its objectives the function of developing sound consumer practices, there is little developed content or even literature which directly addresses this objective. Teachers choosing to pursue consumer topics must individually develop resources or adapt appropriate materials from other subject areas.

Consumer content for industrial arts programs has been emphasized for decades, yet little has been done to develop concise and specific useable content: the emphases of industrial arts remains centered around skill development (Schmidt & Pelley, 1966; Young, 1980). Recent government concern about consumer education has yet to make a significant and visible impact upon most industrial arts content and method. This is evidenced by the lack of data and information concerning consumer education in current industrial arts literature. Since 1972, there were no presentations identified as "consumer education" in the American

Industrial Arts Association Conference Proceedings; and a computer aided search of the ERIC Clearinghouse files and Dissertation Abstracts revealed only 11 items in the literature, including research efforts since 1953, which addressed consumerism in industrial arts.

The development of such specific content can be considered a complex task due to the wide array of courses included in many industrial arts curriculums and their actual interpretation by individual teachers. Curriculums typically include numerous courses in materials, power, graphic communications, and courses such as manufacturing or construction. Past efforts at consumer oriented content within industrial arts have been isolated and have varied from individual efforts at content for inclusion in specific courses, to state curriculum development efforts which provided lists of suggested learning activities.

A typical individual effort at consumer education content for specific use in a course was developed by Baker (1979). This effort addressed the selecting and purchasing of abrasive materials such as sandpaper, and was intended as a brief, but informative consumer topic which could be presented to the student following a "hands-on" method at an appropriate time during a course.

A wider range of specific content segments such as "Comparing Goods and Services" for industrial arts was developed in Ohio under the title "Industrial Arts Resource Supplement to the Consumer Education Curriculum Guide to Ohio" (Ohio State Department, 1971). Each of the content segments was given in the form of information, concepts, generalizations and specific behavioral objectives, and suggested learning activities. However, none of the 28 content segments were directly related to

specific industrial arts courses. Many of the suggested learning activities were discussion-lecture based, and were not always appropriate for activity oriented classes. Many contained no specific material content and needed individual teacher development before implementation.

A broader geographic effort was undertaken by a task force from the southeastern area of the United States under the editorship of Olson (1972). This work detailed industrial arts responsibility in presenting consumer education elements to a wide range of students including disadvantage inner-city students, rural students, and non-English speaking students, as well as those with mental or physical handicaps. However, the document provided only broad guidelines as to what consumer learning elements should be. No directly and immediately useable content was developed.

Some specific research on consumerism in industrial arts was conducted by Schmitt (1953) and Acker (1971). The work by Schmitt, entitled "A Study to Determine Course Content in Consumer Education For Industrial Arts Based on Selected Durable Goods" examined learning activities centered around the selection, use, and care of certain manufactured items. Acker's study was concerned only with the development of broad consumer education objectives for industrial arts courses.

The most recent concern for implementing consumer knowledge into industrial arts has been expressed by Buffer (1979). Buffer listed several general goals such as: the understanding of the economic interdependence of a community; how to determine quality; and the analysis and selection of parts and services. Again, however, no specific factors were developed that could be directly applied in a given classroom.

Yet, to enable youth and adults to effectively select industrial goods and services, to help improve their economic worth and style of living, and to enhance the overall economic and social functioning of our nation, something more than generalized guidelines must be reproduced. Specific methods, content and materials are needed that are directly adaptable for immediate classroom use.

Some specific consumer education content for industrial arts has been developed but it has often been very broad and very lengthy, and in most cases not directly aimed at any particular course within the industrial arts curriculum. While this lack of specific course direction seems ideal for broad adoption into an education setting, lengthy content could discourage its consideration for use in specific courses by classroom teachers. Householder's (1977) ENCORE Project would be an example of such a product. It consisted of a series of apparently very useable brief elements concerning energy. However, the combined project totaled over 200 pages, and had a tendency to overwhelm existing course structures and to discourage teachers from attempting to work out specific utilization of the content.

At the national level, most efforts have focused upon philosophical questions and efforts to implement sweeping curriculum changes. Virtually nothing has been developed to aid the teacher to directly address many of the stated goals of industrial arts.

Some common industrial arts content is apparently related to consumer functions and many teachers feel that they do address these goals. Yet there is not consistency or common base of content and method from which broad improvements can be developed. Further, students usually do not learn things well unless guided directly toward learning

them; the concept that theory that is learned is automatically transferred to its application is false. Faculty psychology, as a viable learning theory, was proven invalid 60 years ago.

Today, trends indicate that energy costs and economic problems will intensify. The net result for consumers will be an increased need for wise buying and using practices. For youngsters who are students now but who will become consumers in the near future, there will be a greater need for wise buying skills and less time to develop them. Therefore consumer education elements take on an increasing relevance for program content.

Texas Needs

Specific methods, content and materials are needed now. These must be directly adaptable for immediate classroom use. With approximately 200,000 students involved in industrial arts in Texas, specific needs persist for materials that: could fit into existing courses without overwhelming them and relate consumer education to energy conservation. The need for specific materials is complicated by the array of courses, however.

Typical course offerings include such topics as construction, manufacturing, woods, metals, power and energy, and drafting. The list in Texas encompassess approximately 40 separate course titles from grade 7 through 12 (Texas Education Agency, 1977). In Texas, for example, these 40 separate courses include an enrollment of over 200,000 students, with some 80,000 enrolled in the junior high or middle school levels.

In Texas, another problem exists. Many students drop out of school

to enter the labor market long before they graduate from high school. These are often those who need practical education the most: the disadvantaged, the academically deficient, and cultural minorities. The greatest drop out rate is around the 9th grade.

The talented, at the other extreme, enter very specialized academic programs at the 9th and 10th grade levels. These are directed at college preparation and usually stress a traditional academic subject.

The net result is that any practical, applied educational experience related to energy or consumer education would be most effective at the middle school or junior high school level. Further, most school curriculum are already crowded; there is a resistance to adding more courses.

Industrial arts programs are common to all regions of Texas. A variety of courses is offered in schools ranging from tiny, rural schools to teeming, urban schools in both suburban and inner-city settings. Students vary in abilities from mainstreamed, mentally handicapped to the brilliant. Others with physical handicaps are commonly enrolled as well. In border regions, Spanish may be heard in industrial arts classes as much as English.

It is common practice in the school to identify potential drop-outs and to place them in industrial arts courses to receive a modicum of skill and work-success-safety attitudes. In this respect, the clientel for such consumer education content for industrial arts would likely be those who need it the most.

The need remains for consumer content which can be immediately infused into present industrial arts courses. Such content should be:

a. Directly appropriate to the maximum number of established

courses at the widest range of grade levels so as to reach the most people.

b. Least disruptive to courses within the present curriculum structure.

c. Acceptable to industrial arts teachers.

d. Designed so that it can be used either independently by students, or by teachers for group instructions.

e. Directly applicable to current consumer needs in our advanced technological society.

f. Presented in a bilingual context.

g. Appropriate to grades 7-9 as well as higher grades.

h. Provide materials that are effective and reusable to maximize the long term effects.

Logically, consumer content developed within this framework would consist of relevant, brief, specific segments of information designed to complement present courses without overwhelming them or diminishing current teacher practices. Such content would also best be developed based on a consensus of information obtained from those persons currently engaged in teaching industrial arts and from those preparing such teachers.

Specific Research Problems

Several questions arise if one attempts to develop content within the content guidelines (a through h) previously defined. What content or topics are appropriate to a broad range of courses? No lists are available. What would industrial arts teachers accept? What content is appropriate for consumer concerns for those who are not yet adult consumers and who will not reach their potential for several years?

Further, there is little to indicate how such material would be presented to the greatest effect.

The objectives of this project, Consumer Education For Texas Industrial Arts (CETIA) were formulated to address the research questions mentioned.

The specific objectives of CETIA were to: (1) identify 3 to 10 modules most widely adaptable into industrial arts; (2) to develop them in English/Spanish text; (3) to test them in a school setting; and, (4) then to distribute the refined modules to all school districts within the state. Also involved is testing typical industrial arts programs to determine to what degree consumer efficiency is really developed in students.

This later type of research is badly needed in the field. Most of the research in industrial arts centers around the best method to teach skills or which skills are best. However, the field objectives, such as developing career awareness, consumer efficiency, safety habits and so on remain untested. This leaves the field in the position of not having proof of its claims in a time of dwindling resources.

To meet the objectives, five research and dissemination steps were defined. These were:

1. Identify the most appropriate content topics by survey techniques.
2. Develop a system of analysis to define content material within each topic in a consistent and meaningful way.
3. Develop a format in which to present the learning materials.
4. Test a portion of the materials in a school setting by

statistical comparisons and teacher reactions concerning:

a) Whether or not the materials can implement learning the content.

b) The method of best use.

c) Whether or not the bilingual format is of value.

d) Whether or not industrial arts courses teach consumer content without the special materials.

5. Disseminate the materials to all school districts within the state.

UNIT II
METHODS

A variety of methods were used to address the development, testing and dissemination of the materials. All phases, except the dissemination, were addressed by the four research and development steps: (1) identifying the content; (2) developing the analysis; (3) developing the format; and, (4) field testing. Since the dissemination through mailing is self explanatory and the remainder of the project is addressed by these four research elements, this unit is organized around these four elements.

Identifying the Content

A matrix survey form was developed to elicit information related to consumer content for industrial arts programs in Texas. Initially, a survey form consisting of 40 possible content items for inclusion in an industrial arts program was developed from a review of curriculum materials in industrial arts. This tentative survey form was reviewed by 10 people who were either faculty members or graduate students in the Industrial Education Department at Texas A&M University. Several items were refined and the number of items was reduced to form a 25 item matrix (see Appendix A). Across one axis of a questionnaire, grade levels and courses would be identified. The vertical axis would list specific topics that would be considered appropriate for that grade level and for that type of course.

Next a survey was conducted utilizing two samples, one nationally based, the other Texas based. The national sample of 25 was randomly selected from those persons listed as industrial arts teacher educators in the 1980-81 Industrial Teacher Directory (Dennis, 1980) by first randomly selecting 25 institutions, and then selecting one person from

each of those institutions. The Texas sample consisted of all 24 persons recently engaged in a Texas Industrial Arts Curriculum workshop to develop a new industrial arts curriculum for Texas schools (Householder, 1980). This latter group was a mixture of teacher educators, supervisors, and classroom teachers who had completed an intensive two week investigation into the Texas curriculum, its needs, and emerging trends. They were considered to be the most informed group in the state concerning curriculum needs, thus constituting a select population rather than a random sample.

Each of the 49 persons was mailed a copy of the matrix in the late fall of 1980. The instrument consisted of the revised consumer module titles for inclusion in an industrial arts program combined in a matrix to provide information on:

a. Industrial arts courses for which these module topics will be appropriate.

b. The grade level at which each module might best be utilized.

c. Whether or not each respondent presently included similar topics in their industrial arts courses.

d. The eight modules each respondent considered the most important.

Thirty-four of these surveys were returned by December 15, 1980. Five more were obtained by January 10, 1981 after follow-up procedures were initiated, resulting in a return of 39 surveys or 80% of those mailed out. The return of the Texas population was 17 (71%) and the National return was 22 (88%). This information was tabulated by frequency counts, and rank ordering of these counts used to identify the "most important" modules.

The comparison of the two samples was then mailed to a national panel

of advisors composed of people prominent in relating consumer education to either industrial arts or vocational education. The specific module topics were derived from combined Texas and National rankings as modified by suggestions of the National Advisory Panel. Where results were similar, the most emphasis was given to the opinions of the Texans. From these processes, eight topics were selected as those most appropriate to a wide array of courses. The eight topics were applicable in some form to almost every industrial arts course currently approved by the Texas Education Agency. The topics were: fire protection devices; safety clothing; guarantees and warranties; hand tools; power hand tools; glues and adhesives; sandpaper and abrasives; and, energy efficiency in homes and apartments.

Developing the Analysis

While the industrial arts guidelines have stressed the importance of developing consumer awareness and ability, most have not provided specific methods or content. Indeed, the development of specific methods or content is generally left to the individual teacher. This could perhaps be due to the wide array of courses. Typical courses include construction, manufacturing, woods, metals, power, and drafting. This diversity makes the development of independent consumer education content for industrial arts both impractical and inappropriate.

While various people have, at times, developed units appropriate to their course content, and some teacher preparation institutions have developed information pertaining to one or more areas, specific needs persist for a process that will enable teachers to fit consumer education content into existing courses without overwhelming the regular course

content. Also, a process is needed to allow individual teachers to develop content appropriate to their specific courses and communities. The American concept of a local school benefiting the local community is fundamental. Nationally developed material may not fit local needs due to community differences, but it could provide a pattern for developing material for specific, local needs.

To devise a consistent means of generating the text, an analysis system was also developed by the project staff. This allowed the researchers to use the same pattern to derive and to present the content to be the most meaningful content in the most compact package. The steps in this process were: (1) anticipate the needs of the student for the specific topic; (2) use a cost effective comparison of cost with intended use; (3) show the student how and where to shop around; (4) safety of the topic and the need for related safety apparel.

Need Vs. Content

The first analytical step in developing consumer content is to assess the consumer needs in relationship to the content of the course. To do this, one must consider those goods and services that students are most likely to buy, rent or lease. For example, detailed information on home construction for energy savings in a woodworking course is probably not appropriate. Why? Tips on checking for energy efficient apartments before renting or leasing would probably be much more appropriate for typical students since most students, as future young adults, rent or lease before they buy. For example, to prepare students to become more energy efficient in heating an apartment, a teacher must realize that little can be done in terms of affecting the construction of the apartment, nor can much be seen about some construction details. Also, leasing agents

or apartment managers may be neither able nor willing to answer questions on construction details. This puts the young adult in the position of having to deal with what he or she can see or add to the dwelling with minimal expense in order to save energy.

The first step in the analysis is simply a process of putting one's imagination to work: to imagine the students' role as an inexperienced consumer. Then start answering the questions concerning what information is needed to know to be a wise consumer. Only the present or immediate future should be considered due to rapidly changing consumer markets.

Cost Effectiveness

The second step in the analysis sequence is to consider cost versus application. Included are the initial purchase cost against the intended use and duration. Two examples might be appropriate.

First, if a student is going to purchase an electric hand drill, some consumer questions to consider are: (1) should the expensive heavy duty unit be purchased, or should the student buy a light duty unit at a much cheaper cost? The answer could depend on what the student will use the unit for and how often the unit is to be used; (2) how long will the unit be kept, and how long is it expected to last? Then, (3) what attachments may or may not be acquired for use? (4) What type of materials will be drilled? and (5) What are the speeds and working conditions?

For example, lower cost and quality products might be better where a painted surface is to be refinished. If the paint is to be removed by sanding, a coarse, low cost and quality sand paper could be the best buy. Paint clogs sandpaper grit rapidly, and the sandpaper will be useless long before it would wear out. Therefore, any increase in quality would not extend the useable life. The additional cost for better quality

would be wasted.

A visualization of some typical applications provided examples. Dictums such as "Always buy the best" may not be the most efficient utilization of funds and should not be imposed on the student. There are many different factors for different products: is the unit rechargeable or reusable? Should it be rechargeable or reusable? When the products may range from electric batteries to spray paint and fire extinguishers, exact rules are useless, but developing the habit of asking certain questions is vital.

Shop Around

Next the use of alternative products and alternative methods is considered. Encourage comparitive shopping. Is there something that will work better? Does the cost of the original item or the alternative vary from store to store? These two questions are the heart of this step. In the case of sanding off old paint, perhaps a scrapping process or a planing process would be better and cheaper. A "thinking attitude" about alternatives was considered to be a key factor.

A wise consumer learns where to look and where to buy. Students should be made aware of specialty stores such as hardware stores, paint stores, lumber yards and other appropriate places. Further, they should become aware of specialty firms and catalogs. Some stores have specialty catalogs for tools, power tools, work clothes and many other items that are not in their regular line of goods. Tool companies often have special catalogs available for reference in their showrooms.

Almost any city of any size has several of these types of stores. These special catalogs not only give comparative prices but can show various alternative processes or equipment. "Do-It-Yourself" books and

library reference books are all good sources of information or alternatives, and students need to be aware of them.

Safety

The final step before buying a product is to consider the safety involved in the process or operation. Equipment should be evaluated both for: (a) the inherent safety features of the equipment itself; and (b) the safety clothing or equipment that should be worn while using the item. If special clothing or equipment must also be purchased to work safely, another tool or method might be cheaper. Certain other safety precautions must also be included which would include where the object or material can be used and when it cannot be used.

Develop Format

A format for all of the topic modules was derived by the project staff and evaluated by the advisory panel. Each topic or content area was comprised of a content module, a student worksheet or workbook, and a student examination. The entire series was designed in a similar format so that a student could complete each module in approximately one half a period.

The four most commonly identified topics were selected for development first. By using the format described, materials could be given as individual learning packages to "fill in the gaps" or for use during short intervals when glue is drying or other similar times when students may legitimately not be busy. The materials could also by used for regular group work at the convenience of the teacher and as the topics related to the regular course content.

Several styles for learning "modules" were reviewed and a single

style was developed. As a result, the imaginative, short and flexible modular format was developed. These were written in reading levels appropriate for fourth and sixth grade levels with a spacious format. The first four modules were translated into Spanish, reproduced and sent to members of the Advisory Panel in February of 1981. Their comments were retruned by March, 1981, so that their input could be applied before field testing.

Field Testing

The testing process entailed taking the first four developed modules into two separate school districts for field test. The San Antonio and Austin school districts were selected because the districts were large enough to have two separate junior high schools or middle schools with similar student bodies and that would have a significant proportion of students who used the Spanish language extensively. The tests were designed to test the quality of the modules, discover weakness in them and to find the most effective way of using them in the classroom. Further, the process was also a test for industrial arts. By testing specific groups with specially developed achievement test, it was attempted to determine if industrial arts as a field does really teach consumer education as part of its regular content as is so often claimed.

To test this latter concept, students in each city were divided into three groups. An academic control group that had never taken industrial arts was selected but were not given the modules for use. A group of industrial arts students, the industrial arts control group, was also selected, but again, were not given the modules for use. Finally, an industrial arts experimental group in a different school was selected to be given the modules for use. All three groups were given the specific

consumer achievement tests in late April before the modules were placed in the school. Approximately three to four weeks later all students in all three groups were tested with the same achievement test to see how much gain in achievement was noted. This design is noted in figure 1.

The consumer achievement test was composed of the exam questions from each of the four topic modules being tested and comprised 16 multiple choice questions and 34 true-false questions. See Appendix B.

Pretest Apr. 13-27	T_1 (Modules + IA)	T_2 (IA only)	Posttest May 11-25
IA School "A"	IA School "A"		IA School "A"
IA School "B"		IA School "B"	IA School "B"
ACAD. CONTROL			ACAD. CONTROL

Figure 1

Test Design for Each City

To attain sufficient numbers to conduct the tests, consideration was given to attrition factors from absenteeism, leaving school or not being allowed to participate. A list of specific needs were developed by the project staff and were presented to the two participating school districts during a negotiation phase. These needs were:

A) Access to two junior high or middle schools at grades 7 and 8.

1. School "A" to provide 4 or more industrial arts classes that will provide a total of 80 or more students, of which 30 or more students could have Spanish as a native language.

2. School "B" to provide 4 or more industrial arts classes with similar student body composition and similar courses.

3. An academic control group of 20 to 30 students who have not had industrial arts. The academic control group could be from either school. It may be composed of students from P. E. classes or any mixture who are enrolled at the same grade levels as the industrial arts groups.

4. Tests will be administered in 20 to 40 minutes on each of two separate days. The second day will be approximately three weeks after the first.

B) Initial (pretest) testing to be conducted between April 13 and April 27 with posttest conduced between May 11 and May 25

C) One industrial arts group will include the modules in the IA program. The other will not.

In addition, certain other data were also presented during the negotiations. This included the specific duties and functions of the participating schools and how data would be handled. These included:

A) Student Data:

1. Students will be asked their sex, age, grade level and extent of use of Spanish outside of school. The teacher designated as Site Coordinator will be asked to furnish data for each student on the scholastic averages for their industrial arts and for their total program.

2. Participants can be volunteers but a random selection of class units is preferred.

3. All information will be coded. No reference will be made to specific schools or to individual students during the reporting.

4. All information on student data will be confidential and accessible only to project staff during coding. After coding, individual identification will be destroyed and no identification will be possible.

B) Functions of LEA and Project Staffs:

1. Project staff will administer instruments to the academic control group.

2. IA teachers will administer instruments only to their own classes.

3. LEA administrators will determine and approve of all arrangements.

4. School Staff Procedure

   a. Confer with project staff and select subject classes.

   b. Make arrangements for testing and have them approved by building principal.

   c. Notify project staff.

   d. Project staff will administer or assist in pre-test.

   e. Use modules or conduct regular program.

   f. Project staff will administer or assist in post-test.

5. Project staff will not visit schools except during pre or post testing periods.

6. Project staff will check in with principal's office first before conducting further business or any visitation.

In both cities, the school districts complied with requests to the fullest extent possible. The schools in each city were as nearly equal in student body make up as possible, and the participating teachers were judged to be superior teachers in approximately equal, traditional industrial arts curriculum and facilities.

For both city districts, parental permission forms were provided and kept in the offices of the principals. Students comprising the academic control group were randomly selected by the local industrial arts teacher (site coordinator) and the counselors or principal. Instructions were given to the site coordinators in terms of random selection and/or systematic random selection and were also requested to use either process. One school district used a random selection process while the other used

a randomly selected home room from which students taking industrial arts were excused for the testing.

The site coordinators also provided a general academic performance level for each participating student in all of the groups. This was simply a rating of "A, B, C, etc." based on the students overall academic standing.

In theory, the industrial arts group that studied the modules would score the best; the industrial arts group without the modules would score the next best; and, the academic group with neither industrial arts nor the modules would score the lowest. Also in theory, Spanish speaking students would have no difficulty with the modules in a bilingual format and would score equally well as the English speaking students. Yet another theoretical factor is that the gain from pretest to posttest could be similar for corresponding groups in each city.

To test these factors, two hypotheses were developed.

1. There is no significant difference in pre to post test gains among or between the academic control groups, the industrial arts contrl groups or the industrial arts experimental groups in either school district.

2. There is no significant difference between pre to post test gains between Spanish speaking students and English speaking students.

Each site coordinator who conducted the application of the modules, or experimental treatment, was also asked to evaluate and critique the modules after using them. The form used is shown in Appendix C.

UNIT III

FINDINGS

The degree of participation, the statistical analyses and reactions to the materials are topics of this unit. This unit is organized around two of the four research factors identified for the project, identifying the content and field testing. The remaining two are combined into one brief section.

Identifying the Content

The content was identified by sending a survey instrument (Appendix A) to a Texas sample and to a national sample. As mentioned earlier, the Texas sample return rate was 71% and the national return rate was 88%.

The frequency of responses are shown in the matrices of Figure 2 (National sample) and Figure 3 (Texas sample). Both the National and Texas samples appear to place similar emphases on the modules with regard to the courses or content areas in which such modules should be included and the grade level at which they should be taught. It is interesting to note the modules such as handtools, fire extinguishers, and protective clothing are indicated for utilization in all of the identified content areas. The other modules are obviously more specialized and relate to associated curriculum content areas.

A large proportion of the national sample indicated that much of the content is currently taught except for furniture advertising, recreation equipment, financing, used cars, used motorcycles, and guarantees and warranties. A greater frequency of the Texas sample (compared to the National sample) indicated no application ofmany of the consumer modules.

CONSUMER MODULE TITLES	COURSES OR CONTENT AREA								GRADE LEVEL		PRESENT APPLICATION			MOST IMPORTANT
Note: Each title is preceded by "Purchasing or Selecting...."	Metals	Woods	Power	Manufacturing	Construction	Graphic Arts	Drafting	Electricity/Electronics	6-8	9-12	Teach this content now	Don't teach it but should	Not considered at all	(mark 8 only)
Glue and adhesives	6	15	0	12	12	7	3	1	12	13	12	2	1	6
Metal finishes	14	1	6	13	5	0	1	2	9	12	9	3	2	2
Wood finishes	0	15	0	12	12	0	0	0	11	14	13	1	1	6
Wood fasteners	0	14	0	10	12	0	0	0	10	14	12	2	0	3
Drill bits	13	14	6	12	10	2	5	3	10	13	11	2	1	3
Hand tools	15	16	13	14	13	7	6	11	12	14	12	2	1	9
Electrical hand tools - drills	13	13	8	11	11	1	0	9	7	12	8	4	1	7
Electrical hand tools - saws	7	13	1	9	11	0	0	1	7	12	7	5	1	5
Electrical hand tools - routers	0	13	1	9	10	0	0	0	4	12	7	4	1	1
Electrical hand tools - sanders	9	13	2	11	8	0	0	0	5	11	8	4	1	2
Sandpaper & other abrasives	13	15	7	13	12	1	0	2	11	11	12	2	1	6
Furniture construction	3	13	0	11	6	0	6	0	5	14	9	4	2	4
Furniture advertisements	0	7	0	6	2	2	0	0	2	8	2	3	7	1
Energy efficient homes & apartments	1	4	3	2	10	0	13	4	6	12	8	2	2	9
Home construction hints	0	5	0	1	12	0	10	1	5	11	11	1	1	6
Fire extinguishers	11	11	8	9	9	7	4	9	10	10	6	5	2	9
Protective clothing	12	10	7	8	8	7	1	6	8	10	10	1	2	7
Recreation equipment	7	8	5	5	4	0	2	2	6	9	3	3	6	3
Automobile tires	1	0	12	1	1	0	0	0	3	11	2	4	7	3
Motor oils	1	1	11	0	0	0	0	0	4	11	5	1	6	0
Lumber	0	15	0	7	14	1	3	0	11	3	11	3	1	6
Financing (car etc.)	1	1	6	2	2	0	2	1	3	8	4	4	5	6
Used cars	0	1	8	0	0	0	0	0	0	8	2	4	7	2
Used motorcycles	0	1	8	0	0	0	0	0	0	8	2	4	7	1
Guarantees and warranties	8	9	10	10	10	5	5	7	6	11	3	7	2	7

Figure 2: Frequency Response of the National Sample

CONSUMER MODULE TITLES	COURSES OR CONTENT AREA								GRADE LEVEL		PRESENT APPLICATION			MOST IMPORTANT
Note: Each title is preceded by "Purchasing or Selecting...."	Metals	Woods	Power	Manufacturing	Construction	Graphic Arts	Drafting	Electricity/Electronics	6-8	9-12	Teach this content now	Don't teach it but should	Not considered at all	(mark 8 only)
Glue and adhesives	7	19	0	15	16	10	1	2	16	17	16	0	0	10
Metal finishes	18	2	6	13	3	1	3	4	13	17	13	1	1	3
Wood finishes	0	17	1	12	14	0	2	0	16	17	13	1	0	3
Wood fasteners	0	19	0	14	18	0	2	1	16	17	11	0	0	2
Drill bits	19	18	11	15	16	0	3	4	16	17	16	0	0	4
Hand tools	19	18	15	17	18	8	6	10	17	15	16	0	0	12
Electrical hand tools - drills	17	17	12	16	19	0	0	6	14	16	15	1	0	6
Electrical hand tools - saws	9	17	3	13	17	0	0	2	8	17	13	2	0	4
Electrical hand tools - routers	3	18	1	1	14	0	0	1	4	17	9	3	0	1
Electrical hand tools - sanders	11	18	6	14	14	0	0	2	11	15	12	2	0	4
Sandpaper & other abrasives	17	18	8	4	14	0	0	0	17	15	14	2	0	4
Furniture construction	2	18	0	9	4	0	2	0	6	17	11	1	0	5
Furniture advertisements	1	12	0	5	3	2	1	0	4	1	5	6	1	2
Energy efficient homes & apartments	0	6	9	1	19	0	11	6	11	18	12	3	0	16
Home construction hints	0	7	1	0	20	0	8	1	3	17	9	4	1	5
Fire extinguishers	15	13	14	14	15	12	7	13	12	14	9	5	1	14
Protective clothing	17	10	14	15	13	11	1	8	12	14	12	1	1	6
Recreation equipment	3	3	6	2	1	1	4	2	5	11	3	3	8	3
Automobile tires	1	0	16	2	0	0	0	0	6	16	13	0	1	4
Motor oils	0	0	18	0	0	0	0	0	8	16	12	1	0	0
Lumber	0	19	0	4	19	1	5	0	14	16	12	0	0	1
Financing (car etc.)	1	0	11	5	4	0	2	0	3	13	4	9	3	8
Used cars	0	0	15	1	0	0	0	0	3	15	5	5	3	7
Used motorcycles	0	0	15	1	0	0	0	0	6	12	4	4	4	1
Guarantees and warranties	6	6	9	14	11	4	4	9	9	14	5	9	2	11

Figure 3: Frequency Response of the Texas Sample

The rankings of the "most important" modules based on the frequency of responses are shown in Figure 4. An analysis of these rankings utilizing a Spearmans rank difference correlation coefficient gives a rho of 0.77, indicating a high degree of relationship between those modules selected as most important by each of the National and Texas sample populations.

Based on these rankings the eight most important module topics were selected for further possible development and inclusion in the Texas industrial arts curriculum content. These modules were, in order of importance:

energy efficient homes or apartments
fire extinguishers
hand tools
guarantees and warranties
protective clothing
electric hand tools - drills
glues and adhesives
sandpaper and other abrasives

It should be noted that the modules were chosen utilizing the rankings of the Texas sample first, and then secondly using the ranking of the National sample to break any "ties."

Developing the Modules

The modules were developed from the eight identified topics. These eight modules were written, edited, translated, and re-edited. Four were also field tested.

A consistent form and style was also employed with the analytical process used to derive the content. The developed modules are included in Appendices D through K.

Consumer Module Topic	Rank Order	
	National Sample (N=22)	Texas Sample (N=17)
Glue and adhesives	5	9.5
Metal finishes	18	20
Wood finishes	18	9.5
Wood fasteners	20.5	16.5
Drill bits	14	16.5
Hand tools	3	2
Electrical hand tools - drills	8.5	5
Electrical hand tools - saws	14	13
Electrical hand tools - routers	23	23
Electrical hand tools - sanders	14	20
Sandpaper & other abrasives	14	9.5
Furniture construction	10.5	14
Furniture advertisements	20.5	23
Energy efficient homes & apartments	1	2
Home construction hints	10.5	9.5
Fire extinguishers	2	2
Protective clothing	8.5	5
Recreation equipment	18	16.5
Automobile tires	14	16.5
Motor oils	25	25
Lumber	23	9.5
Financing (car etc.)	6	9.5
Used cars	7	20
Used motorcycles	23	23
Guarantees and warranties	4	5

Note: For Spearman Rank Difference Correlation, rho = 0.77, $p < 0.0001$

Figure 4: Rank Order of the 25 Consumer Module Topics

Field Testing

Field testing was undertaken to examine several questions. These included: (1) whether or not the modules could facilitate learning the desired content; (2) the best method of using the modules; (3) whether or not the bilingual format is effective; and, (4) whether or not regular industrial arts courses teach consumer content without the use of the modules.

Content and Method

The effect of content and method related to research questions 1, 2 and 4 above. To test these, one general hypothesis was developed.

H_{01}: There is no significant differences in pre to post test gains among or between the academic control groups, the industrial arts control groups or the industrial arts experimental groups in either school district.

A total of 284 students completed the pretest - posttest sequence. From this number, equal numbers of students were selected for each group, based on the size of the smallest group. A cell size of 18 was derived,

School District	Group			
	Acad. Control	IA Control	IA Experimental	Total
1.	18	18	18	54
2.	18	18	18	54
Total	36	36	36	108

Figure 5: Students Completing the Test Sequence

and students were randomly selected from within the remaining groups using a table of random numbers to provide a uniform cell size. See Figure 5.

The scores were based on gain or achievement as derived by posttest score minus pretest score. Grade averages were not included in the statistical analyses, but were considered a possible factor should considerable variance be observed.

The first analysis consisted of a 2 x 3 analysis of covariance with gain and pretest score used as covariates. The interaction between the two school districts and the three student groups in each district were also examined. This model would allow the comparisons of means for pretest and gains for each group at each location. It would also allow a comparison of these factors at the different locations.

It must be remembered that two schools in each city were included. The academic and industrial arts control groups were taken from one school while the actual experimental treatment was conducted at a different school. This would isolate the groups to prevent discussion among student subjects which could contaminate the control groups. The schools were carefully selected so that the population or student body at each was as nearly similar as possible. However, the test design assumes that the student populations at both schools in each city are equal, and that the total student populations in the two cities are equal. Therefore, pretest scores as a "starting point" were examined to see if the six groups did in fact "start" at the same point.

It was expected that the groups, such as the academic control group, in each city would be equal. It was expected that the two industrial arts groups would be equal in both cities, but would score higher than the academic group if industrial arts did indeed teach consumer skills in the

identified areas. It was also expected that both experimental groups would exhibit greater gain scores than both the industrial arts control groups. Literally, while the academic control groups in both cities would be the same, the industrial arts control groups in both cities would score equally higher, while the experimental groups would score equally highest.

However, these expectations were not met. See figure 6. As can

Source	DF	SS	F Value	Pr > F
Schools	1	1488.62	15.79	0.0001
Treatments	2	680.74	3.61	0.0306
Schools/Tr.	2	2098.07	11.13	0.0001
Error	1	3711.28	39.37	0.0001

Figure 6: CoVariance Results for the Overall Analysis

be seen, significant interaction occurred between both school districts as well as among treatments. Therefore the part of the hypothesis relating to difference between school districts was tentatively rejected. This finding also negated the assumptions of equality and necessitated other analyses to determine treatment effects.

To examine the source of variance, a test of parallelism was initiated. This would determine if the pretest score and gain were related. This procedure examines the source of variance to see if it is due to interaction between groups or to interation between the covariants. Interaction between the covariants would suggest that the effects observed were not due to treatment gains. See figure 7. The results of this test indicates

Source	DF	SS	F Value	Pr > F
error/treatment	2	193.70	1.02	0.3633
error/school	1	0.01	0.00	0.9940
error/school/treatment	2	250.05	1.32	0.2717

Figure 7: Test for Validity Covariance

that the covariance between the pretest score and the gain is valid. The only variance that would indicate significant differences occured between school districts and treatment groups.

Since test scores of all groups in one school district significantly differed from the corresponding groups in the second district, the performance of the groups in each district was separately examined. Figures 8 and 9 show the results for school district 1. The analysis of covariance (COVAR) for treatment effect indicated significant differences.

Source	DF	SS	F Value	Pr F
Treatment	2	1141.46	7.15	0.0019
error	1	1946.96	24.38	0.0001

Figure 8: Covariance for Treatment Effect in School District 1

The model accounted for 44% of the variance and a least squares means analysis as in figure 9, showed the only significant difference to be between the industrial arts control and experimental groups.

Treatment	Mean	Pr > F for Groups 1	2	3
1-Academic	67.93	-	0.0675	0.0768
2-IA Control	62.23		-	0.0004
3-IA Experimental	73.51			-

Figure 9: Source of Significant Differences for School District 1.

The same analyses for school district 2 yielded the results shown in figures 10 and 11. The COVAR analysis indicated significant differences and accounted for 36% of the variance. A least squares means analysis

Source	DF	SS	F Value	Pr F
Treatment	2	1612.92	7.30	0.0017
error	1	1766.32	15.98	0.0002

Figure 10: Covariance for Treatment Effect in School District 2.

indicated that only the control groups differed from one another.

Treatment	Mean	Pr > F for Groups 1	2	3
1-Academic	52.62	-	0.0004	0.0635
2-IA Control	66.12		-	0.0715
3-IA Experimental	59.37			-

Figure 11: Source of Significant Differences for School District 2.

The results of these analyses are inconclusive. The general hypothesis concerning no difference between or among groups is neither accepted nor rejected. The issue is further clouded by the fact that in district 1, the modules were used as regular, direct instructional material. Significant gains were noted. In district 2, the use of the modules was left to student initiative. In this case, the gain was not significant.

Since one module on fire protection devices could conceivably be uniformly unknown to all groups, the COVAR analyses were re-examined with the gains adjusted by removing all test questions concerning this topic. Results followed the same pattern as before.

Bilingual Effects

Generally, students with poor English backgrounds perform poorly in school. It is also generally believed that students with good Spanish, but poor English, competencies perform at a lower level than their contemporaries who have better English capabilities. To test the effect of bilingual modules in this experiment, the following hypothesis was developed.

> There is no significant difference between pre to post test gains between Spanish speaking students and English speaking students.

The achievement of students in the industrial arts experimental groups who used the Spanish was compared with that of students who used only English. The former group included students with a comparatively wide range of Spanish fluency, but no assessment was made of the fluency in both languages.

A paired t-test was used to analyze the gains of these groups. Separate analyses were conducted for both school districts. Students

were paired by exact matching of the demographic variables. These variables were age, sex, grade level, number of industrial arts courses previously taken and language use characteristics. In essence, each experimental group was matched with only English speaking students performance paired with the performance (gain) of comparable students with ability in the Spanish language.

Each group consisted of 12 pairs. This number was derived from the pool of respondents and was the largest number of pairs that could be matched in one group.

In school one and in school two, no significant differences were found. See figures 12 and 13. While these data indicate similar achievement by individuals with similar backgrounds, the data could also indicate an increased achievement due to possible effects of the modules. An additional t-test was conducted for the group which was involved through direct lectures and reading assignments. See figure 14.

	Spanish Group	English Group
Mean	15.16	10.51
Variance	77.33	31.36
Std. Deviation	3.50	5.60
n	12	12
Calculated t value		1.55
t value for significance, .05 level, 22 DF		2.07

Figure 12: t-test Comparing Gains by Spanish and English Speaking Students in School District 1.

	Spanish Group	English Group
Mean	9.67	6.33
Variance	31.88	39.15
Std. Deviation	5.65	6.25
n	12	12
Calculated t value		1.36
t value for Significance, .05 level, 22 DF		2.07

Figure 13: t-test Comparing Gains by Spanish Speaking and English Speaking Students in School District 1.

	Spanish Group	English Group
Mean	66.17	79.00
Variance	64.33	29.45
Std. Deviation	8.02	5.43
n	12	12
Calculated t value		4.59
t value for Significance, .05 level, 22 DF		2.07

Figure 14: t-test Comparing Overall Gain of Spanish and English Speaking Students in School District 1.

The last analysis was conducted with post test scores rather than gains. As can be noted the Spanish group exhibited a significantly lower general mean and a greater variance. Coupled with the previous two analyses on gains, which showed no differences, the data suggests similar gains from groups of differing ability levels.

Teacher Reactions

The four modules tested were rated using the form in Appendix C.

Generally, the modules were well received by both the teachers. A summary of their reactions to the closed response portions of the form is shown in figure 15. The circled numbers indicate the average of the two responses. As shown, the responses in most areas are near the "most desirable" rating. Both teachers wanted to retain the materials that they field tested for continued use, and both felt that the modules: (1) added content not normally covered; did not detract from their programs; and, planned to use the units in successive school years.

Both teachers commented on the type of Spanish used on the modules. One teacher used the materials as a supplement to safety, hand tool, and elective hand instructional units. He also suggested that the "content level" be increased. The other teacher used the materials for regular lectures and assigned readings. One teacher also felt that the time period for field testing was very brief, and would have preferred receiving the material earlier in the year.

CETA 31
USE RATING

Teacher _____ School _____

Please circle your rating for each of the following factors:

	Least Desirable				Most Desirable
1. Are the topics appropriate for class use?	1	2	3	(3.5)	4
2. Is the content appropriate for class use?	1	2	3	(3.5)	4
3. Is the reading level appropriate?	1	2	3	(3.5)	4
4. Overall, rate the English usage.	1	2	3	(3.5)	4
5. Overall, rate the Spanish usage.	1	2	(3)		4
6. Are the units appropriate for individual study?	1	2	3	(3.5)	4
7. Are the units appropriate for class or group use?	1	2	3	(3.5)	4
8. Overall, how would you rate your students' reaction to these?	1	2	(3)		4

9. Do you have a preferred way of using the units? Yes (X) No

If so, how do you use them:

_____

_____

10. Have these units added content you would not have covered? (Yes) No

11. Have these units detracted from your program? Yes (No)

If so, how?

_____

_____

12. Do you plan to use the units after this year? (Yes) No

Other Comments:

Figure 15: Response of Teachers Using Materials in Field Tests

UNIT IV

CONCLUSIONS AND DISCUSSION

The conclusions for each element of identifying the content and field testing are presented separately. Some specific discussion relating to each of these elements is also presented in the pertinent subsections.

Finally, the broader conclusions and discussion factors are presented in the following section. The final section relates to specific recommendations concerning both future research and dissemination efforts.

Identifying the Content

The content was identified by conducting and comparing a Texas sample and a national sample. The results of the two were significantly correlated.

Results of the survey also indicate there is little conflict between National and Texas opinion with regard to consumer topics for industrial arts, the courses or content area in which they should be included, the most suitable grade level for application, present use of such modules, and finally the rankings of the modules for importance. In fact, the rank order correlation confirms a high degree of association between the Texas and National rankings of the modules.

The frequency of those respondents indicating they teach this content now is high for both samples. However, the nature of the survey did not ascertain either the degree to which these are taught, or the specific content covered by the persons involved.

Field Testing

The results of the field testing are not fully conclusive. However,

based upon significant findings for certain groups it would appear that the materials do elicit gains in the appropriate content topics when used as direct instructional materials.

It would also seem that the bilingual format is appropriate for these grade levels in districts where the population is composed of significant portions of people who use the Spanish language. Even though the Spanish speaking groups did not achieve better than the English speaking group, their overall average scores were significantly lower while their average gains were not. Literally, students with lesser averages were making gains equal to those of students with higher averages.

General Conclusions

Consumerism has long been established as a viable part of an industrial arts curriculum. As technology advances and more and more products and services become available then an ability to chose wisely and prudently becomes increasingly vital to social efficiency. Today's students need to become the wise consumers of tomorrow by utilizing their personal knowledge and skills as efficiently as possible.

The literature review revealed an almost total lack of developed materials of factual accountability for attaining this vital industrial arts objective. A selection of consumer module topics (as indicated by this survey) for further development and possible inclusion in industrial arts programs can only enhance relevance in today's society and assist industrial arts teachers in achieving this important objective in their programs. In this respect, this study was successful and the methods used were appropriate. The content identified is applicable to industrial arts programs at all levels for both Texas and the nation with perhaps only minor, local modifications. In addition, the analysis process

and format appear to be useful and functional.

However, based upon the limited field tests, there is conflicting evidence that industrial arts programs routinely teach the common identified content. One industrial arts control group significantly outscored the academic control group; the other did not. Since both were control goups, there was no mitigating factor such as direct method.

When the modules were included directly in the instructional process, significant gains were evidenced. This would suggest the usefulness of the developed material.

Students who score lower on classroom tests also usually achieve at a lower rate. This is also characteristic of Spanish speaking students with poor English skills. In the tests, the Spanish speaking students averaged lower test scores but showed approximately equal gains. Equal gains from lower averages suggests that the use of bilingual materials aids learning.

However, this conclusion is very limited. The effect could be caused by the novelty of the situation, by using the Spanish text as a reference rather than a main tool, or by unknown effects. The sample sizes, it must be remebered, were very small.

Recommendations

Based upon the findings and conslusions the following recommendations are made.

1. That these materials be distributed, publicized and promoted as they appear to offer substantial value to industrial arts programs of Texas and to its young citizens.

2. That a broader investigation of whether or not industrial arts programs routinely teach consumer concepts, and if so, do they differ from those used in this study.

3. That this survey effort be replicated periodically to detect changes needed in content on a broad scale. Further, that these techniques be used by local units to identify and to develop materials appropriate for those localities.

4. That more substantial investigations on a wider scale be undertaken to examine the potential value of bilingual materials in specific, technical areas.

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APPENDICES

APPENDIX A

SURVEY OF
CONSUMERISM IN INDUSTRIAL ARTS

1. A number of potential content modules for consumer education in industrial arts are listed on the attached matrix. Could you please complete the matrix, supplying information on:

   a. Industrial arts courses for which these module topics would be appropriate.
   b. The grade level(s) at which each module might best be utilized.
   c. Whether or not you presently include similar topics in your industrial arts courses.
   d. The 8 modules you consider the most important.

   Place "X" where applicable - Note: more than one category for each module may be checked.

   For example:

CONSUMER MODULE TITLES	COURSES OR CONTENT AREA								GRADE LEVEL		PRESENT APPLICATION			MOST IMPORTANT
Note: Each title is preceded by "Purchasing or Selecting...."	Metals	Woods	Power	Manufacturing	Construction	Graphic Arts	Drafting	Electricity/Electronics	6-8	9-12	Teach this content now	Don't teach it but should	Not considered at all	(mark 8 only)
Glue and adhesives		X		X		X			X	X		X		
Metal finishes	X		X	X						X	X			

2. Check the level at which you presently teach: Junior/Middle School ____
   High School ____
   University/College ____

3. Please list persons who you consider to be "Knowledgeable Experts" in consumer education (and other information if known).

   Name Position Address Telephone

CONSUMER MODULE TITLES	COURSES OR CONTENT AREA								GRADE LEVEL		PRESENT APPLICATION			MOST IMPORTANT
Note: Each title is preceded by "Purchasing or Selecting...."	Metals	Woods	Power	Manufacturing	Construction	Graphic Arts	Drafting	Electricity/Electronics	6-8	9-12	Teach this content now	Don't teach it but should	Not considered at all	(mark 8 only)
Glue and adhesives														
Metal finishes														
Wood finishes														
Wood fasteners														
Drill bits														
Hand tools														
Electrical hand tools - drills														
Electrical hand tools - saws														
Electrical hand tools - routers														
Electrical hand tools - sanders														
Sandpaper & other abrasives														
Furniture construction														
Furniture advertisements														
Energy efficient homes & apartments														
Home construction hints														
Fire extinguishers														
Protective clothing														
Recreation equipment														
Automobile tires														
Motor oils														
Lumber														
Financing (car etc.)														
Used cars														
Used motorcycles														
Guarantees and warranties														

Instructions: Multiple Choice Questions. Read the questions carefully. Select the correct response by darkening in the letter on the answer sheet that corresponds to the question.

Example: The state capital of Texas is in _____.

A. Houston
B. Austin
C. Dallas
D. Fort Worth

1. Before buying tools you should consider:

a. The cost
b. What you need
c. The warranty available with them
d. All of the above

2. The choice of an A, B, or C fire extinguisher is determined by:

a. Price
b. The potential hazards in your home
c. Ease of service

3. Protective equipment that should be used for spray painting should include:

a. A dust respirator
b. Face mask
c. A filter respirator
d. Cotton gloves

4. When purchasing tools a wise shopper looks for the following qualities except _____.

a. Rust-resistant steel
b. Quality steel
c. Guarantee or warranty
d. Cheapest price

5. Protective equipment that will provide good eye protection for most jobs are:

a. Regular eye glasses
b. Contact lenses
c. Full face shields
d. Eye glasses with safety side clips.

6. Double insulated means a tool _____.

a. Is protected against electrical shocks.
b. Will not freeze up.
c. Has a non-metallic casing.
d. Is quiet when in operation.

7. The third round prong on a power cord plug is:

a. There to help hold the cord in the socket.
b. For an electrical ground.
c. To control electrical polarity.
d. All of the above.

8. A wise tool buyer will consider all the factors listed below except _____, before buying a tool:

   a. Desire to own many tools
   b. Need
   c. Quality
   d. Usefulness

9. Protective clothing that meets safety standards will be marked with:

   a. UL symbol
   b. Safe clothing sticker
   c. Have no markings
   d. A yellow triangle

10. A grease fire in the kitchen will require which type of extinguisher:

   a. Type A
   b. Type B
   c. Type C
   d. Type D

11. Battery powered fire alarms have an advantage over household current operated alarms in that they:

   a. Are cheaper to run
   b. Will run in a blackout
   c. Make a louder noise

12. Most cars should have a _____ pound multipurpose extinguisher.

   a. 2 1/2 lb.
   b. 5 lb.
   c. 10 lb.

13. Heavy duty tools are usually constructed with _____.

   a. Ball bearings
   b. More powerful motors
   c. Nylon casings
   d. All of the above

14. Before buying any protective clothing you must consider:

   a. Cost
   b. Comfort
   c. Kind of job you will be doing
   d. All of the above

15. Plastic fire extinguishers have at least one disadvantage over all-metal models:

   a. Are cheaper
   b. Tend to leak pressure
   c. Easier to handle

16. Hammer handles are available in the following materials except _____.

   a. Plastic
   b. Wood
   c. Steel
   d. Fiberglass

If the statement is True or False. Mark the appropriate response on the answer sheet that corresponds to the question.

Example: Austin is the state capital of Texas

Ⓣ Ⓕ

17. Ionization and photoelectric smoke alarm detectors are the two types available.

18. The UL label means that this type of unit has been tested.

19. It is possible to buy several sizes of adjustable wrench.

20. Tools are only made of high quality tool-steel.

21. Power hand tools must have a "UL" label.

22. Roller or ball type bearings are standard items for most power tools.

23. A person doesn't need to shop around--all store prices for power tools are about the same.

24. All electric drills have variable speed and reversing features.

25. A grease fire is a class "A" fire.

26. Eye glasses are the only protection you need in the work environment.

27. Smoke detectors run off of batteries or household current.

28. It is safer to install two types of fire detectors in a home.

29. Different saws are generally purchased for cutting wood or metal.

30. Before buying any power tool a person needs to know how "hard" it will be used.

31. Warranties can mean that the tool will be repaired or replaced at no cost to buyer.

32. It is only possible to buy hammers with wood handles.

33. Screwdrivers can be purchased with different size and styles of tips.

34. Eye protection can be provided by both goggles and face shields.

35. Unvented goggles will fog over.

36. Leather gloves are best used for carrying metal with sharp edges.

37. It is not necessary to have a handle on a file.

38. All stores will replace broken tools at no cost.

39. Ear Muffs and mickeymouse ears offer the same kind of protection.

40. A filter type respirator is used when working in conditions where fine dust is in the air.

41. When buying a fire extinguisher the size and type are important considerations. 50

42. There are different fire extinguishers for different fires.

43. All safety clothing has an underwriters laboratory label.

44. Tools warranties last a life-time.

45. The price is similar for different leather gloves.

46. Service often is not available on power tools.

47. Power tools are grounded by the round prong on the cord plug.

48. A double insulated tool means that it will not freeze up.

49. A multipurpose fire extinguisher A, B, C can be used on most fires.

50. Before buying a smoke detector you should evaluate your home's needs.

APPENDIX C

TEACHER RATING FORM

Teacher _____ School _____

Please circle your rating for each of the following factors:

	Least Desirable			Most Desirable
1. Are the topics appropriate for class use?	1	2	3	4
2. Is the content appropriate for class use?	1	2	3	4
3. Is the reading level appropriate?	1	2	3	4
4. Overall, rate the English usage.	1	2	3	4
5. Overall, rate the Spanish usage.	1	2	3	4
6. Are the units appropriate for individual study?	1	2	3	4
7. Are the units appropriate for class or group use?	1	2	3	4
8. Overall, how would you rate your students' reaction to these?	1	2	3	4
9. Do you have a preferred way of using the units?	Yes	No		

If so, how do you use them:

_____

_____

10. Have these units added content you would not have covered? Yes No

11. Have these units detracted from your program? Yes No

If so, how?

_____

_____

12. Do you plan to use the units after this year? Yes No

Other Comments:

El Departamento de Educación Industrial
de Texas A&M
presenta otro tópico en la

SERIE PARA COMPRAR INTELIGENTEMENTE

HERRAMIENTAS DE MANO

Objetivos:

Hay muchos detalles para considerar al comprar una herramienta. Diferentes herramientas son usadas para trabajos diferentes. Uno puede comprar las herramientas en una variedad de tamaños y calidades.

FOLLETO DE INFORMACION

sobre

- MARTILLOS
- DESARMADORES
- PINZAS
- SIERRAS
- DESVOLVEDORES
- LIMAS
- HERRAMIENTAS DE MANO

INSTRUCCIONES: LEA EL CONTENIDO DE ESTE FOLLETO Y USE LA INFORMACIÓN PARA COMPLETAR LAS HOJAS DE TAREA PARA ESTE MODULO.

Por favor no escriba en este folleto

Developed by a grant from the R. C. U. of the Texas Education Agency

The Industrial Education Department
of Texas A&M
presents another topic in the

SMART BUYING SERIES

HAND TOOLS

Objectives:

There are many things to consider when buying hand tools.
Different tools are used for different jobs.
Tools may be purchased in a variety of sizes and qualities

INFORMATION BOOKLET

about

- HAMMERS
- SCREWDRIVERS
- PLIERS
- SAWS
- WRENCHES
- FILES
- QUALITY TOOLS

INSTRUCTIONS:

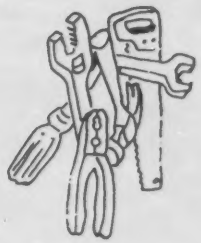
READ THE MATERIAL IN THIS BOOKLET AND USE THE INFORMATION TO FILL OUT THE WORKSHEETS FOR THIS MODULE

Please do not write in this booklet

Developed by a grant from the R. C. U. of the Texas Education Agency

¿Por que' Necesito las herramientas de mano?

La mayoría de nosotros necesitamos herramientas de mano para ha[illegible] trabajos básicos, como reparos menores.



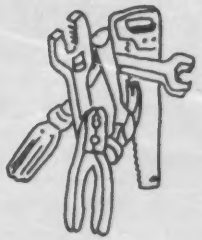
Herramientas de mano buenas tambien te pueden ahorrar dinero.

¿Qué debo comprar primero?

Tarda tiempo para establecer una colección de herramientas. Debe comprar las herramientas mejores para los trabajos que probablemente Ud estara haciendo.
Puesto que las herramientas buenas durarían para una vida, Ud. tiene que hacer decisiones prudentes antes de comprarlas.

Why Do I Need Hand Tools?

Most of us need hands tools to do basic jobs, such as minor repairs.



Good hand tools can also save you money.

It takes time to build up a set of tools. You will want to buy the best tools you can afford for the jobs you are most likely to be doing.
Since good tools will last a lifetime careful decisions must be made before buying them.

¿Que' Considerar?

Este folleto para comprar inteligentemente dará algunos consejos en Como ser un cliente inteligente de algunas herramientas buenas.

Martillos son unas herramientas básicas que tienen suo general diariamente.

A. Vienen en dos tipos para maderamen:

garfio derecho o garfio curvado

El de garfio derecho se usa más frecuentamente para rasgar y seperar los tableros.

El garfio curvado protejte el superficie de la madera al arrancar un clavo.

B. Hay tres tipos de mangos que pueden ser usados.

- de madera
- de acero y
- de fibre de vidrio

C. Los martillos están tamañados por el peso de su cabeza. Los pesos varían de 7 a 28 onzas, con el de 16 oz. considerado como la norma.

Examine varios pesos y escoga el que es lo más comodo.

What To Consider

This Smart Buying Booklet will give some pointers on How to be a smart buyer of some common hand tools.

Hammers are a basic tool that have general everyday use:

A. There are two common types for woodworking:

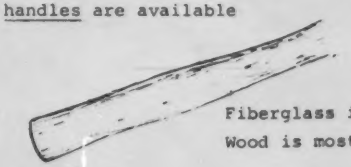
straight claw or curved claw

straight claw is most often used for ripping and prying boards apart.

The curved claw protects wood surfaces when pulling nails.

B. Three kinds of handles are available

- wood
- steel
- fiberglass



Fiberglass is the strongest, Wood is most comfortable.

C. Hammers are sized by the weight of the head. The weights range from 7 to 28 oz., with 16oz. considered standard.

Try several weights and choose the one that is most comfortable.

Desarmadores

El desarmador normal de abertura o clave bastaría en la mayoría de los trabajos ocasionales alrededor de la casa.

Los desarmadores se venden por la anchura de la punta y el largo. Una punta de 5/16" en anchura con una extención de 8 a 10 pulgadas es un buen tamaño para comprar.

Este gráfico muestra como los desarmadores deben servir en el tornillo.

Incorrecto	Incorrecto	Correcto	Incorrecto	Correcto
demasiado ancho. Dañará la madera.	demasiado estrecho. Dañará el tornillo	La punta tiene la misma anchura que la abertura.	La punta es demasiada afilada. Puede resbalarse de la abertura.	Los lados de la punta son paralelos con los lados del tornillo.

Otras puntas de desarmadores para las cabezas de los tornillos especiales son:

cuadrada desarmador estrella desarmador mecánico

Cosas para buscar:

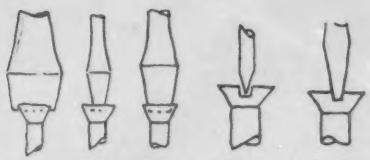
1. una hoja cromada
2. un mango plástico de alta calidad
3. Acero de alta calidad (¿Qué tipo de garantia esta afrecida con la herramienta? ¿vida? ¿ninguna?

Screwdrivers

A standard slot screwdriver will take care of most of the odd jobs around the house.

Screwdrivers are sold by tip width and overall length. A 5/16" tip width and a length of 8" to 10" is a good size to buy first.

This chart shows how the screwdriver should fit the screw.



WRONG	WRONG	RIGHT	WRONG	RIGHT
Too wide. Will damage wood.	Too narrow. Will damage screw.	Tip same width as slot.	Tip too sharp. May slip out.	Sides of tip are parallel with sides of slot.

Other screwdriver tips for special screw heads are: Square Phillips Clutch

look for:

1. A chrome-plated blade
2. High-quality plastic hand
3. High quality steel (what kind of warranty is given with the tool? - lifetim none?)

Pinzas

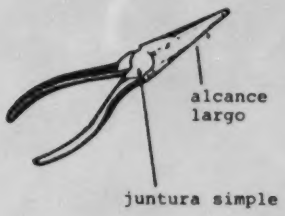
Son una herramienta útil que pueden agarrar y alcanzar.

combinación

para poder agarrar

La pinza combinación es lo más útil. Puede agarra objectos de diámetro pequeño o grande. Tiene un cortador al lado para cortar el alambre.

punta de aguja



Estas pinzas son usadas para aguantar y cortar. Son ideales para trabajos electricos.

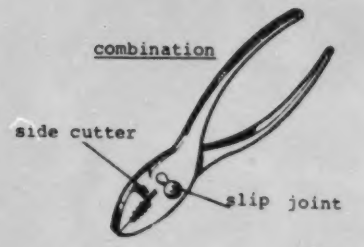
Cosas para buscar:

- Mandíbulas que agarran igualmente
- Una hoja cromada. Material que resiste al moho.
- Mandíbulas que abren facilmente
- Calidad de acero

Pliers

A useful tool that has both gripping power and reach.

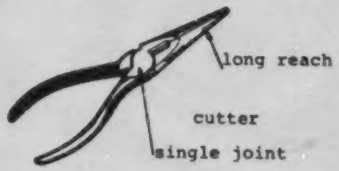
combination



gripping power

The combination plier is most useful. It can grip large or small diameter objects. It may also have a side cutter for cutting wire.

needle nose



These pliers are used for holding and cutting. They are ideal for electrical work.

Look For:

- Jaws that grip evenly.
- Chrome-plated blade. Rust-resistant material.
- Jaws that open smoothly.
- Quality of steel.

Desvolvedores ajustables son útiles para tener en una colección de herramientas de uso general.

mandíbula ajustable

Este tipo de desvolvedor tiene una mandíbula ajustable. Puede servir para tuercas de varios tamaños.

Detalles para buscar:

El ajuste de la mandíbula ajustable al base del desvolvedor debe caber firmemente para asegurar un contacto seguro con los lados de una tuerca.

Una cabeza estrecha que lo permite entrar en espacios pequeños.

Cromado para resistir al moho.

Acero de calidad y una garantía contra rotura.

Tamaño correcto - son disponibles en extenciones de 6 pulgadas o más.

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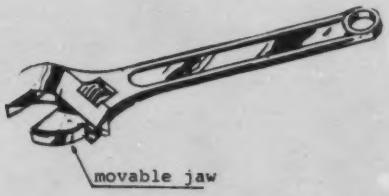
Wrenches

Adjustable wrenches are useful to have in a general purpose tool box.



This type of wrench has movable jaws. It can fit different size nuts.

Things to Look For:

the fit of the movable jaw to the wrench base. It must fit snugly to insure a tight contact on the sides of a nut.

a thin head to enable it to get into tight spots.

chrome-plated to resist rust.

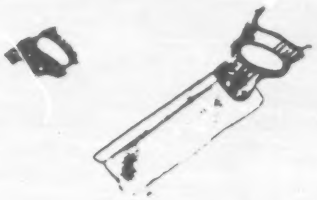
quality steel and warranty against breakage.

correct size - they are available by length from 4 inches upwards.

68

Sierras

La sierra correcta para el trabajo hace el trabajo más fácil. Hay tres tipos de sierras que manejarán los cortes más comunes de maderamen.



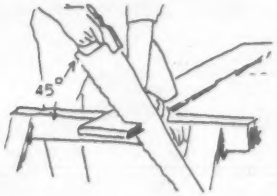
El serrucho

sierra iglete

sierra

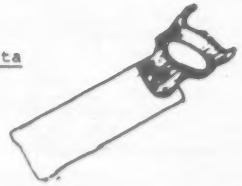
Estas sierras tienen dientes diferentes y están hechas diferentemente para varios trabajos.

El serrucho corta a travez del vano.



La sierra corta con el vano.

La sierra igleta



es buena para los trabajos de las alacenas y tiene dientes finos.

Saws

The right saw for the job makes for easy work.

There are three types of saws that will handle the most common woodworking cuts.

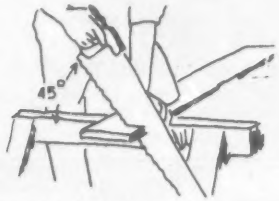
Crosscut saw

Back saw

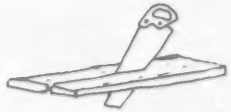
Rip saw

These saws have different teeth and are made differently for various jobs.

The crosscut saw cuts across the grain.



The rip saw cuts alongside the grain.

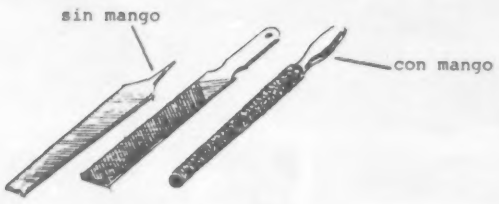


The back saw

has fine teeth and is good for cabinet work.

Las limas son otras herramientas útiles para su colección de herramientas de uso general. Se usan para limpiar las rebabas de metal de la superficie o de los huecos.

¿Cuál es la más segura?



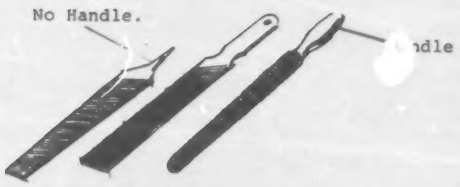
Las limas sin mango no son seguras. Uno puede cortar su mano con el borde puntado de la lima. Siempre compre un mango para la lima.

Las limas tienen varias formas. (llana, cuadrada, triángulo, o redonda) y varias tosquedades de cortes.

FILES are handy tools for your general purpose tool box.

They are used to clean metal burrs from surfaces or holes.

Which is Safer?

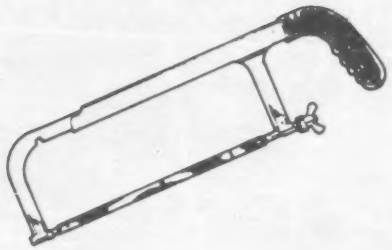


Files used without handles are not safe. Your hand can be cut by the pointed end of the file.
Always purchase a handle for the file.

Files have different shapes; flat, square, triangle or round and different coarseness of cuts.

Segueta

Una segueta puede cortar metal.



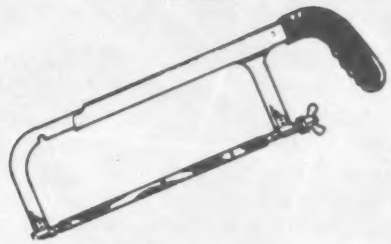
Uno puede comprar varias hojas con dientes de varios tamaños. Algunos materiales pueden ser cortados mejor con menos dientes mientras otros materiales pueden ser cortados mejor con más dientes.

Cosas para buscar:

- acero cromado
- un mango firme
- un utensilio de tensión que ajusta facilmente

Hacksaw

Metal can be cut with a hack saw.



Hacksaw blades are available with different teeth counts per inch. Some materials cut better with fewer teeth while other material will cut better with more teeth.

Look For:

-chrome-plated steel.
-tight fitting handle.
-an easily adjustable blade tension device.

Calidad y garantías

Herramientas de buena calidad son verdidas en muchas tiendas. Que No lo engañen en comprar las herramientas a precios baratos. Buena calidad usualmente cuesta dinero.

Verifique los rasgos y garantías. Compre cuidadosamente usando rebajas anunciadas como una manera de obtener una buena compra.

Así..... RECUERDE

- compre inteligentemente
- verifique la garantía de la herramienta
- verifique la calidad de las herramientas
- verifique el precio - rebajas
  - catálogos

Compre por todos lados y sea un cliente inteligente

- Es su dinero -

Quality and warranties.

Good quality tools are sold by many stores. Do not be misled into buying tools because they are inexpensive. Good quality usually costs money.

Check the features and warranties. Shop carefully using advertised specials as a way of getting a good buy.

So... REMEMBER

- Buy wisely
- Check tool warranty
- Check tool quality
- Check cost - store "specials"?
  - catalogs

Shop Around & Be a Wise Consumer

- It's your money -

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presenta otro tópico en la

SERIE PARA COMPRAR INTELIGENTEMENTE

HERRAMIENTAS DE MANO

HOJA DE TAREA PARA LOS ESTUDIANTES

INSTRUCCIONES : 1) COMPLETE ESTAS HOJAS DE TAREAS LUEGO DE LEER EL FOLLETO.
2) USE EL FOLLETO PARA ENCONTRAR LAS REPUESTAS SI ES NECESARIO.

Developed by a grant from the R. C. U. at the Texas Education Agency

The Industrial Education Department
of Texas A&M
presents another topic in the

SMART BUYING SERIES

HAND TOOLS

STUDENT WORKSHEETS

INSTRUCTIONS : 1. FILL OUT THESE WORKSHEETS AFTER READING THROUGH THE INFORMATION BOOKLET.
2. USE THE BOOKLET TO FIND THE ANSWERS IF YOU NEED TO.

LATER YOU MAY BE GIVEN A QUIZ ON THIS INFORMATION

YOUR TEACHER HAS THE ANSWER KEY FOR THESE WORKSHEETS

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Por favor de las respuestas ausentes.

1. Nombre Ud. cino herramientas útiles que necesitará la mayoría de gente por la casa, para trabajos de reparación, etc.
   a.) _____
   b.) _____
   c.) _____
   d.) _____
   e.) _____
2. Cuando compra Ud. cualquier herramienta, los dos detalles claves para buscar son _____ y _____.
3. Las limas vienen en varios _____ y _____ de corte.
4. ¿Qué es una garantía de herramienta? _____
   _____
5. Tres rasgos buenos de un desvolvedor ajustable son
   a.) _____
   b.) _____
   c.) _____
6. Dos tipos de pinzas son _____ y _____.
7. Dos rasgos de un desarmador que necesitan ser consideados son
   a.) _____
   b.) _____
8. Nombre tres tipos de punta de los desarmadores
   a.) _____
   b.) _____
   c.) _____

00 79

Please fill in the missing answers.

1. Name five useful hand tools that people need around the house for repair work, etc.
   a.) _____
   b.) _____
   c.) _____
   d.) _____
   e.) _____
2. When you buy any handtool, the two key things to look for are _____ and _____.
3. Files come in different _____ and _____ of cut.
4. What is a tool warranty? _____
   _____
5. Three good features of an adjustable wrench are
   a.) _____
   b.) _____
   c.) _____

(— 8C

9. Un martillo es una herramienta común de la casa. ¿Qué son tres detalles que necesitan ser considerados antes de comprar uno?

   a.) _____

   b.) _____

   c.) _____

10. Un desvolvedor bueno de objectivos multiples se llama un desvolvedor _____.

6. Two types of pliers are _____ and _____.

7. Two features of screwdrivers that need to be considered are

   a.) _____

   b.) _____

8. Name three types of screwdriver tips?

   a.) _____

   b.) _____

   c.) _____

9. A hammer is a common household tool. What are three things to consider when buying a hammer?

   a.) _____

   b.) _____

   c.) _____

10. A good all-purpose wrench is called an _____ wrench.

SERIE PARA COMPRAR INTELIGENTEMENTE

HERRAMIENTAS DE MANO

PRUEBA AL ESTUDIANTE

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HAND TOOLS

STUDENT

QUIZ

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Escribe "T" para cierto o "F" para falso.

Cierto Falso

_____ 1. Todas las herramientas tienen una garantía de vida.

_____ 2. Solo es posible comprar los martillos con mangos de madera.

_____ 3. Los desarmadores se pueden comprar con varios tamaños y estilas de puntas.

_____ 4. Los desarmadores de abertura o clave son lo mismo.

_____ 5. Las pinzas combinación son más conveniente para trabajos electricales.

_____ 6. Es posible comprar los desvolvedores ajustable en varios tamaños.

_____ 7. Todas las herramientas son de acero de alta calidad.

_____ 8. Generalmente se compra sierra diferentes para cortar madera o metal.

_____ 9. No es necesario tener un mango en una lima.

_____ 10. Todas las tiendas substituirán herramientas rotas sin cargo.

Quiz

Write in T for True and F for False.

True False

_____ 1. All tools have a life-time warranty.

_____ 2. It is only possible to buy hammers with wood handles.

_____ 3. Screwdrivers can be purchased with different size and styles of tips.

_____ 4. Slot and keystone screwdrivers are the same.

_____ 5. Combination pliers are most suitable for electrical work.

_____ 6. It is possible to buy several sizes of adjustable wrench.

_____ 7. All tools are made of high quality tool-steel.

_____ 8. Different saws are generally purchased for cutting wood or metal.

_____ 9. It is not necessary to have a handle on a file.

_____ 10. All stores will replace broken tools at no cost.

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SERIE PARA COMPRAR INTELIGENTEMENTE

ROPA PROTECTIVA

Objectivos: Trabajos en escuelas y en el trabajo pueden ser peligrosos. Se hace falta diferentes aparatos para la protección. ¿Cuál escogería Ud?

Folleto de información
sobre protección para:

los ojos
el oído
la cara
las manos
los pulmones
la cabeza

INSTRUCIONES

Lea el contenido de este folleto y use la información para completar las hojas de tarea para este módulo.

Por favor no escriba en este folleto

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SMART BUYING SERIES

PROTECTIVE CLOTHING

Objectives:

Work in schools and on jobs can be dangerous
Different devices are needed for protection
Which would you pick?

INFORMATION BOOKLET

about PROTECTION FOR:

EYES
HEARING
FACE
HANDS
LUNGS
HEAD

INSTRUCTIONS:

READ THE MATERIAL IN THIS BOOKLET AND USE THE INFORMATION TO FILL OUT THE WORKSHEETS FOR THIS MODULE

Please do not write in this booklet

Developed by a grant from the R. C. U. of the Texas Education Agency.

¿Por qué necesita protección?

¿Por qué tengo que llevar
estas gafas pesadas?

Pero, se están empañando.
No puedo ver.

Dejeme decirle algunas cosas importantes antes de que Ud. compre ropa protectiva. Tiene que saber:

1. que aparatos diferentes se usan para differentes partes de su cuerpo.
2. que tipo de trabajo estará haciendo.

Protegerán sus ojos de
las chispas.

Deja me ver. ¡Claro!
Has comprado el tipo de
gafas incorrectas.

Why Do You Need Protection?

WHY do I have to wear these heavy glasses?
They will protect your eyes from the sparks.
But, they are fogging over. I can't see.
Let me look. No wonder! You've bought the wrong kind of glasses.

Let me tell you a couple of important things before you buy any protective clothing. You must know:

1. that different devices are needed for different parts of your body.
2. what kind of job you will be working on.

QUÉ NECESITA PROTECCIÓN?

Primero ¿Qué partes de mi cuerpo necesitan protección?

los ojos

el oído

la cara

los manos

la cabeza

los pulmones

Estas son solamente algunas de las regiones que necesitan protección. Hay muchas maneras de protegerlas. Un comprador intelligente considerará las maneras diferentes de hacer el trabajo.

WHAT NEEDS PROTECTING?

First What parts of my body need protection?

EYES

HEARING

FACE

HANDS

HEAD

LUNGS

These are just some of the areas that need protection. There are many ways to protect them. A smart buyer will consider the best ways to do the job.

PROTECCIÓN PARA LOS OJOS

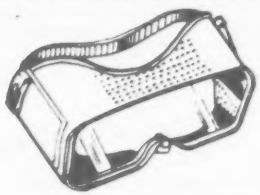
Los ojos pueden ser protejidos de objectos en el aire con gafas de vidrio de seguridad.

gafas de vidrio de seguridad

Esté seguro que el vidrio es vidrio de seguridad. Usado para observar.

copas para los ojos

Protección adicional puede ser añadido por la augmentación de copas a cada lado de las gafas. Usado para metal de maquinas etc.



anteojos ventelados de protección

Los anteojos de protección dan protección completa alrededor de los ojos. Esté seguro que están ventilados, si no, se empañarán.

Protección para toda la cara es possible con este protector. No pesa mucho y no empaña. Use los al trabajar con tornos para la madera.

protector de la cara

EYE PROTECTION

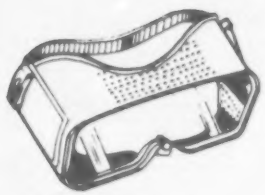
The eyes can be protected from flying objects with Safety Glasses.

safety glasses

Make sure the glass is safety glass. Used for observing operations where flying objects may be present.

Additional protection can be provided by adding cups to each side of the glasses. Used when machining metal.

eyecup



vented goggles

Goggles give complete protection around the eye. Make sure they are vented or they will fog over. Used when grinding.

Full face protection is provided by the face shield. It is lignt weight and doesn't fog over. Use when working on wood lathes.

face shield

OREJAS

Orejas - los aparatos de protección para los oidos filtran los ruidos excessivos.

Uno puede proteger los oídos con los tapones de orejas, pero pueden ser incómodos, así, use...

orejeras o orejas de mickeymouse

Algunas de las orejas de mickeymouse tienen radios incorporados para estimular su uso.

MÁSCARAS RESPIRADORAS

Respiradoras de polvo ligeras son buenas para los pedazos de polvo pesado. Para uso al lijar etc.

respiradoras de polvo

respiradoras de filtro

Pero protección contra el polvo fino y el rociado requiere un sistema de filtración mejor, como la que lleva este hombre.

EAR PROTECTION

Ear protection devices filter out the excessive noise.

Ears can be protected by earplugs, but they may be uncomfortable, so, use ...

earmuffs or mickeymouse ears

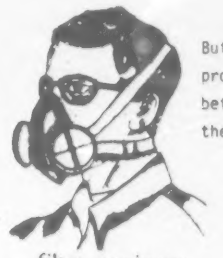
Some mickeymouse ears have built in radios to encourage the wearing of these devices.

RESPIRATORS

Respirators screen out dust and foreign particles

Light-weight dust respirators are satisfactory for large dust particles. For use during sanding.

dust respirator



filter respirator

But fine-dust & spraying protection requires a better filter system like the one this man is wearing

GUANTES

Guantes de cuero o tela protegen a las manos al manejar los filos.

Guantes plásticos protegen las manos de las químicas No absorberan líquidos.

Guantes de cuero grueso protegeran las manos al trabajar cerca de materiales calientes.

No deje puesto los guantes cerca de maquinária con partes que mueven, los guantes pueden enredarse en las partes que estan moviendo y dañar a los dedos o manos.

GLOVES

Leather or cloth gloves protect hands while handling sharp edges.

Plastic gloves protect hands from chemicals. They will not absorb liquids.

Heavy leather gloves will protect your hands while working around hot materials

Do not wear gloves around moving machinery. Gloves can be caught in the moving parts and cause injury to your fingers or hands.

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PROTECCIÓN PARA LA CABEZA

Protejiendo su cabeza de objetos que están cayendo es muy importante.

Sombreros de colisión protegen contra impactos menores.

Sombreros duros dan mucha más protección y satisfacen las reglas de seguridad del gobierno

HEAD PROTECTION

Protecting your head from falling objects is very important.

Bump hats protect against minor impacts.

Hard hats give much more protection and meet government safety standards.

RECUERDE

La compra de ropa protectiva requiere que recuede dos consideraciones:

1. Qué partes de mi cuerpo estoy protejiendo.
2. Que tipo de trabajo y material estaré manejando.

Conociendo estas cosas permitirá que un comprador intelligente compre los aparatos de protección correctos para el trabajo que él o ella va a hacer.

Nota: * Muchos artículos de ropa protectiva satisfacen las reglas de seguridad fijadas por el gobierno. Estos artículos que satisfacen las reglas del gobierno serán marcadas con una etiqueta de la administración de seguridad y salud ocupacional.

Compre astutamente -- Compare el precio

REMEMBER

So ---

Buying protective clothing requires that you keep in mind two important considerations:

1. What parts of my body am I protecting?
2. What kind of job and material will I be handling?

Knowing these things will enable a smart buyer to correctly purchase the right protection device for the job he or she is about to begin.

NOTE * Many articles of protective clothing meet safety standards set by the government. Those items meeting government standards will be marked with an occupational safety and health administration tag.

SHOP WISELY — COMPARE COST

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SERIE PARA COMPRAR INTELIGENTEMENTE

ROPA PROTECTIVA

HOJA DE TAREAS
PARA LOS ESTUDIANTES

Instruciones: 1. Complete estas hojas de tareas despues de leer el folleto informativo

2. Use el folleto para encontrar las respuestas si es necesario.

Más tarde, una prueba puede ser administrada sobre esta información.

Su profesor(a) tiene la clave para estas tareas.

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PROTECTIVE CLOTHING

STUDENT
WORKSHEETS

INSTRUCTIONS: 1. FILL OUT THESE WORKSHEETS AFTER READING THROUGH THE INFORMATION BOOKLET.
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Escriba las repuestan correctas

1. Los dos tipos de sombreros de seguridad son _____ y _____.

2. Manejando material con filos requiere guantes de _____.

3. Protección contra los ruidos puede ser provedido por las _____ y las orejas de _____.

4. Los guantes no deben estar puestas alrededor de máquinaria _____.

5. Gafas con _____ se usan al trabajar con máquinas que trabajan con metal.

6. Liste las seis partes del cuerpo que necesitan protección _____, _____, _____, _____, _____, _____.

7. ¿Qué son las dos ideas importantes que uno tiene que considerar antes de comprar cualquier ropa protectiva?
   a.) _____
   b.) _____

8. Liste los tres tipos de protección para los ojos. _____, _____, _____.

Write in the Correct Answers

1. Two kinds of safety hats are _____ and _____.

2. Handling material with sharp edges require gloves made of _____ material.

3. Noise protection can be provided by ear _____ and ear _____.

4. Gloves should not be worn around _____ machinery.

5. Eye glasses with _____ are used when machining metal.

6. List the six parts of the body that need protecting _____, _____, _____, _____, _____, _____, _____.

7. What are the two important ideas that must be considered before buying any protective clothing?

   1. _____

   2. _____

8. List the three kinds of eye protection. _____, _____, _____.

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DE TEXAS A&M
PRESENTA OTRO TÓPICO EN EL

SERIE PARA COMPRAR INTELIGENTEMENTE

ROPA PROTECTIVA

PRUEBA PARA
EL ESTUDIANTE

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SMART BUYING SERIES

PROTECTIVE CLOTHING

STUDENT

QUIZ

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PRUEBA

Escriba "C" para cierto o "F" para falso

cierto	falso		
_____	_____	1.	Protección para los ojos puede ser provedido con ambos los anteojos de protección y los protectores de la cara.
_____	_____	2.	Los anteojos de protección sin ventilación se empañarán.
_____	_____	3.	Orejeras y las orejas de mickeymouse ofrecen el mismo tipo de protección.
_____	_____	4.	Una respiradora de filtro se usa al trabajar en condiciones donde hay polvo fino en el aire.
_____	_____	5.	Llevando los guantes puestos cerca de las máquinas con partes que mueven puede ser peligroso.
_____	_____	6.	Los guantes de cuero sirven mejor para cargar metal con filos.
_____	_____	7.	Las gafas son la única protección que Ud. necesita en el ambiente del trabajo.
_____	_____	8.	Todos los guantes de cuero tienen el mismo precio.
_____	_____	9.	Toda la ropa protectiva tiene una etiqueta del laboratorio de asegurradores.

QUIZ

True/False (Write T for true or F for false)

_____ Eye protection can be provided by both goggles and face shields.

_____ Unvented goggles will fog over.

_____ Ear muffs and mickeymouse ears offer the same kind of protection.

_____ A filter type respirator is used when working in conditions where fine dust is in the air.

_____ Wearing gloves around moving machinery can be dangerous.

_____ Leather gloves are best used for carrying metal with sharp edges.

_____ Eye glasses are the only protection you need in the work environment.

_____ All leather gloves are priced the same.

_____ All safety clothing has an Underwriters' Laboratory label.

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SERIE PARA COMPRAR INTELIGENTAMENTE

HERRAMIENTAS ELECTRICAS

Objetos: Las herramientas electricas varean en tamaño y calidad. Algunas tienen rasgos especiales que Ud. puede necesitar para hacer trabajos especiales.

FOLLETO DE INFORMACION

SOBRE

taladro
lijadora
sierras eléctricas
consideraciones de seguridad

INSTRUCCIONES

Lea el contenido de este folleto y use la información para completar las hojas de tarea para este módulo.

Por favor no escriba en este folleto.

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SMART BUYING SERIES

ELECTRIC HAND TOOLS

Objectives:

Electric hand tools vary in size and quality. Some have special features that you may need to do special jobs.

INFORMATION BOOKLET

about

DRILLS
SANDERS
SAWS
SAFETY CONSIDERATIONS

INSTRUCTIONS:

READ THE MATERIAL IN THIS BOOKLET AND USE THE INFORMATION TO FILL OUT THE WORKSHEETS FOR THIS MODULE

Please do not write in this booklet

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POR QUÉ COMPRAR LAS HERRAMIENTAS ELÉCTRICAS

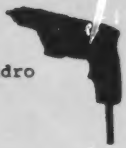
Las herramientas eléctricas pueden hacer un trabajo más fácil. Un comprador inteligente sabrá que rasgos buscar antes de comprar.

Compre las herramientas eléctricas astutamente: este folleto tiene algunos consejos buenos.

lijadora

las sierras eléctricas portatil

taladro



sierra de cuchilla

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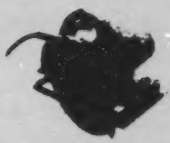
Why Buy Power Hand Tools

Power hand tools can make a job easier. A smart buyer knows what features to look for before going shopping. Buy power tools wisely: this booklet has some pointers.

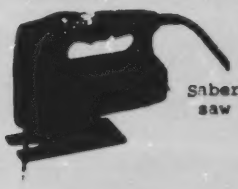
Sander

Portable power saw



Drill

Saber saw



COSAS PARA CONSIDERAR

Todas las herramientas eléctricas tienen rasgos que Ud., como un comprador inteligente, debe buscar.

1. Certificado de aprobación del laboratorio de aseguradores.

este símbolo certifica que la herramienta conforma a las normas de seguridad eléctrica y mecánica.

2. Servicio ligero o pesado. Las herramientas eléctricas se venden para uso doméstico o servicio ligero.

Considere el tipo de trabajo que Ud. hará.

Para servicio pesado o se vende equipo industrial.

Es caro comprar más capacidad de herramienta lo que Ud. necesita.

What To Consider

All power tools have features that you, as a smart buyer, should look for:

1. Certificate of approval by the Underwriters' Laboratory.

This symbol certifies that the tool conforms to electrical and mechanical safety standards.

Check to see that the UL symbol appears on the device and not just on the cord.

2. Light or heavy duty Power tools are sold for domestic or light duty service.

For heavy duty or industrial service.

Consider the kind of work you will be doing.

It's expensive to buy more tool capacity than needed.

3. La garantía de la herramienta

¿Ofrece reparación sin costo o sustitución de una herramienta defectuosa?

¿Hay un limite de tiempo en la garantía?

4. ¿Hay servicio disponible?

Pregunte donde obtener servicio -- ¿una tienda local ¿por correo? ¿Está garantizada la reparación?

Departamento de servicio

5. Tipo de motor:

Está el motor construido con forros o cojinetes? Las herramientas baratas tendrán forros que estan bien para servicio ligero. Herramientas de servicio pesado tendran cojinetes de bola o rodillos.

forros

cojinete de rodillos

3. The Tool Warranty

Does it promise free repairs or replacement of a defective tool?

Is there a time limit on the warranty?

4. Available Service

Ask where to get service--local store? mail out? Are the repairs guaranteed?

Service Department

5. Type of Motor

Is the motor constructed with ball bearings or bushings? Inexpensive tools will have bushings which are fine for light duty use. Heavy duty tools will have ball or roller bearings.

Bushing

Ball Bearing

6. Tipo de conductor a tierra

El conductor a tierra proteje al operador de sacudidas eléctricas.

Este se puede lograr por un conductor a tierra externo.

saliente de tierra

o

enchufe de tierra

Aislamiento doble alrededor de los partes electricas de la herramienta.

110-120VOLT 60HZ-AC 2·2AMPS
3/8 INCH ELECTRIC DRILL
VARIABLE SPEED
REVERSIBLE
DOUBLE INSULATED
0-1200 RPM
MODEL NO. 1472365A
UL

Las herramientas que tienen aislamiento doble tendrán una etiqueta parecida a esta.

6. Type of Grounding

Grounding Protects from electrical shocks

This can be done by either external grounds.

ground socket

ground lug

OR

Double insulation around the electrical parts of the tool

Tools that are double insulated will have a tag similar to this one

110-120VOLT 60HZ-AC 2·2AMPS

3/8 INCH ELECTRIC DRILL

VARIABLE SPEED

REVERSIBLE

DOUBLE INSULATED

0-1200 RPM

MODEL NO. 1472365A

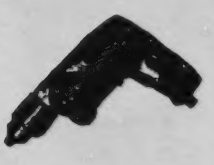
7. Tipo de carter

El cárter puede ser de aluminio o plástico.

Las herramientas de servicio ligero usualmente tienen un cárter de plastico mientras los modelos industriales están construidos de aluminio.

LOS COMPRADORES INTELIGENTES COMPARARÁN LOS RASGOS Y LOS PRECIOS ANTES DE COMPRAR.

servicio pesado



- aislamiento doble
- cárter de aluminio
- mandril de alta calidad
- cortacircuitos interno
- cojinetes de rodillos

servicio ligero

$9.95

- forros
- cárter plástico
- aislamiento doble

La decisión es suya.
Compre la herramienta que corresponde
a sus necesidades.

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7. Type of housing

Housing can be aluminum or plastic

Light duty tools usually have plastic housing while the industrial models are made with aluminum.

SMART BUYERS WILL SHOP BY
COMPARING FEATURES AND PRICES

Heavy Duty

- double insulated
- aluminum housing
- ball bearings
- high grade chuck
- built-in circuit breaker

Light Duty

$9.95

- bushings
- plastic case
- double insulated

The choice is yours.
Buy the tool that fits
your needs.

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RASGOS ESPECIALES

Preguntese si necesita,

velocidad variable

O RPM ---------- 2000 RPM

Alcance de uno o dos velocidades

Special Features

Ask yourself, do
I need,

Variable speed

0 RPM ---------- 2000 RPM

One or two-speed ranges

SEGURIDAD

Siempre consideré la seguridad al comprar las herramientas.

Por ejemplo:

Las sierras eléctricas manuales son peligrosas. Necesitan tener dos rasgos de seguridad.

1. un resgardo movible de la hoja
2. un impedimento automático de la hoja

un impedimento de la hoja

resgardo de la hoja

También verifique la extención del cordón y la dureza del enchufe.

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Un cordón corto puede requerir la adición de un cordón de extención. ¡Esto es un <u>costo adicional</u>!

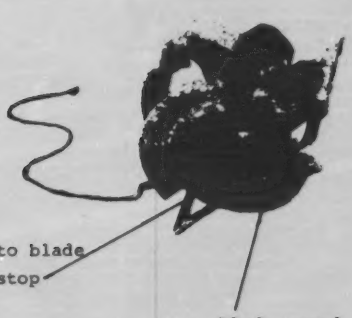
SAFETY

Always consider safety when buying tools.

For Example:

Power hand saws are dangerous. They need to have two safety features.

1. a movable blade guard
2. an automatic blade stop



Also check the length of the cord and the strength of the plug.

A short cord may require that an extension cord be used That is an <u>additional expense</u>!

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Así-- Recuerde

Visite diferentes tiendas - Compre inteligentemente

Investige -

- catálogos
- los precios
- rebajas para el mejor precio posible

So -- Remember

Shop around - Buy wisely.

Check:

- CATALOGS
- STORE PRICES
- BARGAIN FOR THE BEST PRICE.

EL DEPARTAMENTO DE EDUCACIÓN INDUSTRIAL

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PRESENTA OTRO TÓPICO EN LA

SERIE PARA COMPRAR INTELIGENTAMENTE

HERRAMIENTAS ELECTRICAS

HOJA DE TAREAS PARA LOS ESTUDIANTES

INSTRUCCIONES: 1. COMPLETE ESTAS HOJAS DESPUES DE LEER EL FOLLETO INFORMATIVO.

2. SI ES NECASARIO, USE EL FOLLETO PARA ENCONTRAR LAS RESPUESTAS.

UNA PRUEBA PUEDE SER ADMINISTRADA SOBRE ESTA INFORMACIÓN

SU PROFESOR(A) TIENE LA CLAVE PARA ESTAS HOJAS

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SMART BUYING SERIES

ELECTRIC HAND TOOLS

STUDENT
WORKSHEETS

INSTRUCTIONS: 1. FILL OUT THESE WORKSHEETS AFTER READING THROUGH THE INFORMATION BOOKLET.
2. USE THE BOOKLET TO FIND THE ANSWERS IF YOU NEED TO.

LATER YOU MAY BE GIVEN A QUIZ ON THIS INFORMATION

YOUR TEACHER HAS THE ANSWER KEY FOR THESE WORKSHEETS

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PREGUNTAS PARA ESTUDIAR
(ESCRIBA LAS RESPUESTAS CORRECTAS)

1. El símbolo _____ certifica que la herramienta conforma a las normas de seguridad eléctrica.

2. Las herramientas electricas son disponibles en modelos de servicio _____ y _____.

3. Las sacudidas eléctricas pueden ser impedidas mediante _____.

4. Un (a) _____ es una promesa de reparación reparo sin costo o substitución de la herramienta.

5. Las herramientas eléctricas tienen motores construido con _____ o cojinetes _____.

6. Los dos métodos de dar un conductor a tierra son _____ y _____.

7. Los cárteres son disponibles usualmente en _____ y _____.

8. Nombre tres diferencias entre las herramientas de servicio pesado y ligero.
   a.) _____
   b.) _____
   c.) _____

9. La medida de seguridad más importante para las herramientas eléctricas es el _____ del cordón eléctrico.

Study Questions
(Fill in the correct response)

1. The _____ _____ symbol certifies that the tool conforms to electrical safety standards.

2. Power tools are available in _____ duty and _____ service models.

3. Electrical shocks are prevented by _____ and _____.

4. A _____ is a promise of free or low cost repair or replacement of the tool.

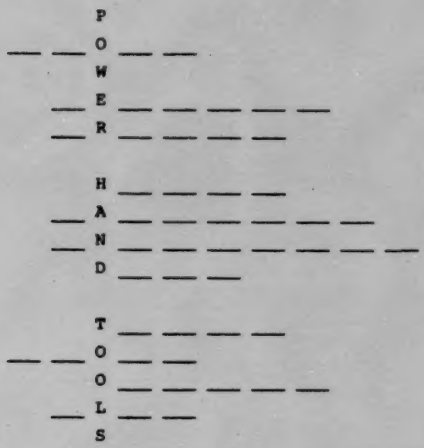
5. Power tools have motors constructed with _____ or _____ bearings.

6. Two methods of providing protection against electrical shocks are _____ and _____.

7. Tool housings are usually available in _____ and _____.

8. List three differences between heavy duty and light duty power tools.
   a.) _____
   b.) _____
   c.) _____

Complete el siguiente juego de palabras llenando los espacios en ambos lados de la letra. Las palabras pueden hallarse en el material que Ud. acabo de leer.



Use estas palabras.

shock
service
ground
warranty
duty
insulated
heavy
plug
prong
outlet
three

Power Hand Tools

Complete the following word game by filling in the blanks on either side of the letter. The words can be found in the material you have just read.

Do these words help?

shock
service
ground
warranty
duty
insulated
heavy
plug
prong
outlet
three

10. Liste cuatro detalles que debe considerar al comprar cualquier herramienta eléctrica.
    a.) _____
    b.) _____
    c.) _____
    d.) _____

11. Liste tres cualidades de los taladores eléctricos que debe considerar al comprar.
    a.) _____
    b.) _____
    c.) _____

12. Las sierras eléctricas portatiles deben tener un resgardo _____ y un impedimento _____.

9. An important safety consideration for power tools is the _____ power cord.

10. List four things you should consider when buying <u>any</u> power hand tool:

a.) _____

b.) _____

c.) _____

d.) _____

11. List three features you should consider when buying electric hand drills.

a.) _____

b.) _____

c.) _____

12. Portable Power saws must have a _____ guard and an _____ stop.

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HERRAMIENTAS ELECTRICAS

PRUEBA PARA EL ESTUDIANTE

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ELECTRIC HAND TOOLS

STUDENT

QUIZ

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(ESCRIBA V PARA VERDADERO O F PARA FALSO)

_____ 1. Antes de comprar cualquier herramienta eléctrica una persona necesita saber en que tipo de servicio la usará.

_____ 2. Las gargantías pueden significar que la herramienta será reparado o substituida sin costo al comprador.

_____ 3. Muchas veces no hay servicio de reparación disponible para las herramientas eléctricas.

_____ 4. Las herramientas eléctricas tienen el conductor a tierra en el saliente redondo en el enehufe.

_____ 5. Una herramienta con doble aislamiento significa que no se congelará.

_____ 6. Las cárters de la herramienta puden ser de plástico o aluminio.

_____ 7. Todas la herramientas eléctricas tienen una etiqueta de "UL".

_____ 8. Todas las herramientas eléctricas tienen cojinetes de rodillos o bola.

_____ 9. Una persona no necesita visitar diferentes tiendas--el precio de las herramientas eléctricas es simular en todas las tiendas.

_____ 10. Todos los taladros eléctricos tienen variación de velocidad y pueden trabajar tambien hacia atrás.

Quiz

(Write T for True or F for False)

True False

_____ 1. Before buying any power tool a person needs to know how "hard" it will be used.

_____ 2. Warranties mean that the tool will be repaired or replaced at no cost to buyer.

_____ 3. Service often is not available on power tools.

_____ 4. Power tools are grounded by the round prong on the plug.

_____ 5. A double insulated tool is one which will not freeze up.

_____ 6. Tool housings can be made of plastic or aluminum.

_____ 7. All power hand tools have a "UL" label.

_____ 8. All power tools have roller or ball type bearings.

_____ 9. A person doesn't need to shop around--all store prices for power tools are about the same.

_____ 10. All electric drills have variable speeds.

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SERIE PARA COMPRAR INTELIGENTEMENTE

PAPEL DE LIJA Y ABRASIVOS

Objectivos: Como seleccionar y comprar materiales abrasivos para differentes trabajos.

FOLLETO DE INFORMACIÓN SOBRE:

papel de lija

lija de metal

otros abrasivos

INSTRUCCIONES: Lea el contenido de este folleto y utilica la informacion para llenar las hojas de tarea para este módulo.

Por favor no escriba en este folleto.

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SMART BUYING SERIES

SANDPAPER & ABRASIVES

Objectives: How to select and buy abrasive materials for different jobs.

INFORMATION BOOKLET

about

Sandpaper
Emery Cloth
other
Abrasives

INSTRUCTIONS:

READ THE MATERIAL IN THIS BOOKLET AND USE THE INFORMATION TO FILL OUT THE WORKSHEETS FOR THIS MODULE

Please do not write in this booklet

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¿Por qué está tomando tiempo este trabajo de lijar?

Dejeme ver lo que Ud. esta haciendo.

¡Ah! Está empezando el trabajo con papel de lija fina.

Dejeme enseñarle algunas cosas sobre papel de lija y abrasivos.

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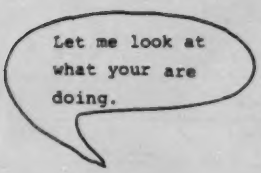

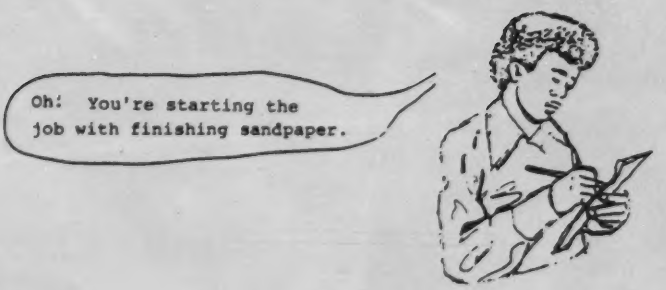

Let me show you some things about sandpaper and abrasives.

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TRABAJOS DE LIJAR

Diferentes clases de abrasivos se requieren para diferentes trabajos. Cada abrasivo esta hecho de diferente material.

Carros

Se usa un papel "seco y mojado" para el cuidado del chasis y el trabajo de pintura. Este no se desintegra en agua. El agua elimina pintura floja.

Muebles

Los productos de madera generalmente requieren un papel de lija que es seco.

Lijadora electrica

Lijadora de faja para pisos.

Las lijadoras de faja utilizan un nudo corredizo abrasivo llamado faja. La faja esta hecha de un material fuerte y flexible y puede ser aspera o lisa dependiendo del trabajo.

Metal Al metal le da brillo con lija para metal que tiene un respaldo de tela que es suave y flexible.

SANDING JOBS

Various kinds of abrasives are required for different jobs. Each is constructed of different materials.

Cars

A "wet & dry" paper is used for car body & paint work. The paper backing doesn't disintegrate in water. The water flushes away the loose paint.

Furniture

Wood products usually require a dry sandpaper.

Power sanding

Belt sander for floors.

Belt sanders use an abrasive loop called a belt. The belt material is strong and flexible. It can be coarse or fine depending on the jobs.

Metal metal is polished with emery cloth, which has soft, flexible cloth backing.

CONSIDERACIONES AL COMPRAR

El tipo de papel abrasivo que Ud. compre también dependerá de otras cosas.

Pregúntese Ud.:

Buying Consideration

The kind of abrasive paper you buy and use will also depend on other things.

Ask Yourself:

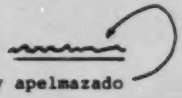
CLASIFICACIONES

Los papeles de lijar y los abrasivos se clasifican de acuerdo al tamaño de las partículas de los abrasivos.

El tamaño generalmente se clasifica con un número.

Los números más bajos indican que el papel es más aspero. Los numeros altos son para acabados mas finos.

#36
áspero y apelmazado

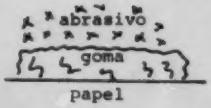


#400

liso

El abrasivo puede ser
- fluído natural
- oxido de aluminio
- carboxido de silicon

El abrasivo está pegado al material del respaldo.

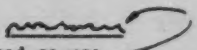


GRADES

Sandpaper & abrasives are graded by the size of the abrasive particles.
The size is usually given by a number.

The lower the number the "coarser" the paper. The high numbers are used for finish work. E.g.

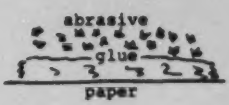
#36
Rough and coarse



#400
smooth

The abrasive may be - natural abrasive.
- aluminum oxide
- silicon carbide.

Sandpaper has the abrasive is glued onto the backing material.



SELECCIÓN

¿Cómo debería comprar el papel de lija?

El papel de lija se vende en:

LA COMBINACIÓN DE PAQUETES PARA DUEÑOS DE CASA

- para todo tipo de uso
- incluyen en la misma caja papel que va de aspero a muy fino

HOJAS INDIVIDUALES

(Para un proyecto pequeño)

ROLLOS

(Por ejemplo lija de metal de 1" de ancho, 50 pies de largo)

CAJAS DE CANTIDADES GRANDES

(para proyectos grandes que utilizan la misma clase de papel)

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SELECTING

How should I buy sandpaper?

Sandpaper is sold in:

HOMEOWNER COMBINATION PACKS
- for all around use.
- will contain coarse to fine sheets in the same box.

SINGLE SHEETS
- for a small project?

ROLLS
- for example 1" wide emery cloth, 50 feet long

LARGE QUANTITY BOXES
- for large projects that use the same coarseness paper

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ASI--RECUERDE

Un comprador inteligente decide antes de comprar.

- Que tipo de trabajo va a hacer.
- Cuanto papel abrasivo se requiere.
- El paquete más económico que debe comprar.

Busque en varias tiendas, compare
los precios, y compre inteligentemente.

So Remember

A wise shopper decides
before buying.

- What kind of job will be done.
- How much abrasive paper is required.
- The most economical package to buy.

Shop around, compare prices, buy wisely!

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PAPEL DE LIJA Y ABRASIVOS

INSTRUCCIONES: 1. Llene estas hojas de tarea despues de leer el folleto de información.

2. Utilice el folleto de información si es necesario.

Más tarde es posible que reciba un exámen sobre esta información.

Su profesor(a) tiene la clave para estas hojas de tarea.

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SANDPAPER & ABRASIVES

STUDENT
WORKSHEETS

INSTRUCTIONS: 1. FILL OUT THESE WORKSHEETS AFTER READING THROUGH THE INFORMATION BOOKLET.
2. USE THE BOOKLET TO FIND THE ANSWERS IF YOU NEED TO.

LATER YOU MAY BE GIVEN A QUIZ ON THIS INFORMATION

YOUR TEACHER HAS THE ANSWER KEY FOR THESE WORKSHEETS

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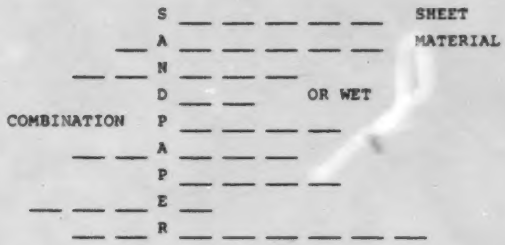
Complete the following word games by filling in the blanks on either side of the letter. The words can be found in the material you have just read.



Do these help?

glued
grades
dry
backing
abrasives
paper
packs
single

Complete the following word games by filling in the blanks on either side of the letter. The words can be found in the material you have just read.

	S	_ _ _ _ _	SHEET
_	A	_ _ _ _ _	MATERIAL
_ _	N	_ _ _ _	
	D	_ _	OR WET
COMBINATION	P	_ _ _ _	
_ _	A	_ _ _	
	P	_ _ _ _	
_ _ _	E	_	
_ _	R	_ _ _ _ _ _	

Do these help?

glued
grades
dry
backing
abrasives
paper
packs
single

Hojas De Tarea

Llene los espacios.

1. Enumere cuatro trabajos que utilizan diferentes clases de materiales abrasivos.
   a.) _____
   b.) _____
   c.) _____
   d.) _____

2. Tres consideraciones cuando Ud. está comprando papel de lija o papel abrasivo son:
   a.) _____
   b.) _____
   c.) _____

3. ¿Para qué se utiliza la lija de metal?

4. Explique la diferencia entre le papel de lija de grado #36 y grado #600.

5. Enumere tres materiales abrasivos:
   a.) _____
   b.) _____
   c.) _____

6. El material abrasivo es _____ sobre papel o respaldo de _____.

WORKSHEETS

Fill in the answers.

1. Name four jobs that need different kinds of abrasive material:
   a. _____
   b. _____
   c. _____
   d. _____

2. List three considerations when buying an abrasive or sandpaper.
   a. _____
   b. _____
   c. _____

3. What is emery cloth used for? _____
   _____

4. Explain the difference between #36 grit and #400 grit sandpaper.
   _____
   _____

5. What are three abrasive materials?
   a. _____
   b. _____
   c. _____

6. The abrasive material is _____ onto a paper or _____ backing.

7. ¿Cuando compraría Ud. un "paguete de combinación de papel de lija" para dueños de casa?

8. Una lijadora de faja requiere un _____ _____ que puede ser obtenido en diferentes grados de áspere z.

9. Para trabajar con el chasis del carro Ud. necesita lija de metal _____ y _____.

10. El papel de lija se puede comprar de tres maneras. Enumerelas.

7. When would you buy a "homeowners assortment" pack of sandpaper? _____

_____

8. A belt sander requires an _____ _____ which can be purchased in different grades of coarseness.

9. For working on the body of a car you need _____ and _____ emery paper.

10. Sandpaper can be purchased in three ways. List them.

a. _____

b. _____

c. _____

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PAPEL DE LIJA Y ABRASIVOS

PRUEBA DE ESTUDIANTE

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SANDPAPER & ABRASIVES

STUDENT

QUIZ

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PRUEBA

Escriba "V" para verdadero y "F" para falso.

_____ 1. Papel de lija viene en sólo un grado.

_____ 2. Papel de lija de terminar esta hecho con material abrasivo áspero.

_____ 3. Maquinas de lijar utilizan papel de lija con un respaldo mas fuerte.

_____ 4. Papel de lija vendido en paquetes de combinacion contienen papel de un solo grado.

_____ 5. Papel de lija esta hecho pegando un material fluido con un material que sirve de respaldo.

_____ 6. El respaldo del papel abrasivo determinará el uso del papel.

_____ 7. El papel de lija que sirve para acabados esta clasificado con numeros bajos.

_____ 8. Papel de lija se vende por tamaño y grado.

_____ 9. Lija de metal es utilizada para productos de metal.

Quiz

True False Write T for True and F for False.

_____ 1. Sandpaper comes in only one grade.

_____ 2. Finishing sandpaper is made with rough abrasive material.

_____ 3. Power sanding machines use sandpaper with a stronger backing material.

_____ 4. Sandpaper sold in combination packs contain only one grade.

_____ 5. Sandpaper is made by gluing abrasive material to a backing material.

_____ 6. Abrasive paper backing material will determine the paper's use.

_____ 7. Finish sandpaper is graded with low numbers.

_____ 8. Sandpaper is sold by size and grade.

_____ 9. Emery cloth is used on metal products.

_____ 10. Papel mojado o seco es utilizado para lijar automoviles.

_____ 11. Antes de comprar cualquier tipo de papel de lija Ud. debe saber que tipo de trabajo va a estar haciendo.

_____ 12. Lija de metal y papel lija son el mismo material.

True False

_____ 10. Wet or dry sandpaper is used to sand automobiles.

_____ 11. Before buying any sandpaper you should know what kind of job you will be doing.

_____ 12. Emery cloth and sandpaper are actually the same material.

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GARANTIAS Y AFIANZAS

Objectivos: Entendiendo garantias y afianzas pueden prevenir confusiones si ocurren problemas con un producto

FOLLETO DE INFORMACION

SOBRE

garantias

afianzas

responsabilidades del comprador

responsabilidades del vendador

INSTRUCCIONES: Lea el material en este folleto y utilize la informacion para llenar la hoja de tarea para este modulo

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SMART BUYING SERIES

GUARANTEES & WARRANTIES

Objectives: Understanding guarantees and warranties can prevent misunderstandings if problems with a product occur.

INFORMATION BOOKLET

about

GUARANTEES
WARRANTIES
BUYER RESPONSIBILIES
SELLER RESPONSIBILIES

INSTRUCTIONS:

READ THE MATERIAL IN THIS BOOKLET AND USE THE INFORMATION TO FILL OUT THE WORKSHEETS FOR THIS MODULE

Please do not write in this booklet

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Este taladro está roto, y la tienda no lo quiere reparar gratuitamente.

Yo pense que el taladro estaba afianzado.

La batería en mi carro no funciona Estaba afianzada por tres años pero aún tuve que pagar extra por una nueva. ¿Por que?

Garantías y afianzas no siempre significan reemplazo gratis. Déjeme decirle algunas cosas sobre garantias y afianzas.

This electric drill is broken, and the store won't repair it for free.

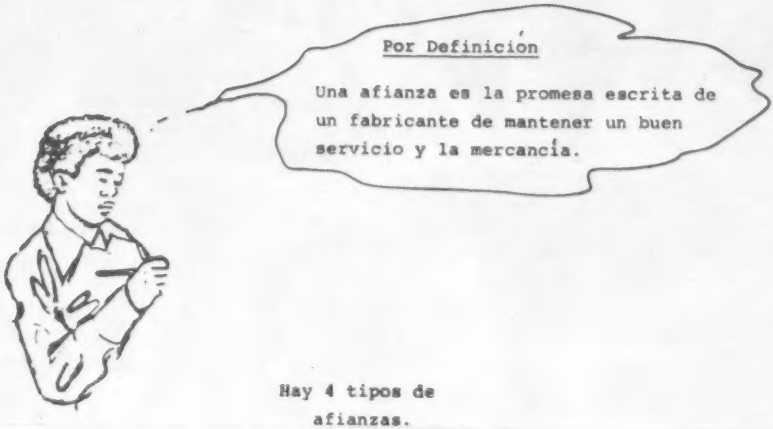
I thought the drill was covered by a warranty.

The battery in my car failed. It had a 3 year warranty but I still had to pay extra for a new one. Why?

Guarantees and warrantees don't always mean free replacement. Let me tell you a few things about guarantees and warranties.

¿CUAL ES LA DIFERENCIA ENTRE UNA GARANTIA Y UNA AFIANZA?

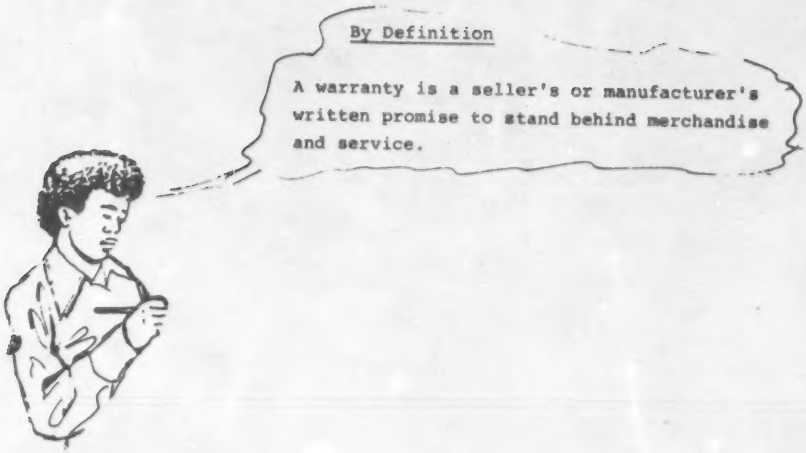
Ambas palabras significan la misma cosa. Son utilizadas intercambiablemente.



Hay 4 tipos de afianzas.

WHAT IS THE DIFFERENCE BETWEEN A GUARANTEE AND A WARRANTY?

They both mean the same thing. The words are used interchangeably.



There are 4 types of warranties.

TIPOS DE AFIANZAS

AFIANZAMIENTO COMPLETO:

Reparaciones hechas sin costo alguno, ofrecen un reintegro completo o un intercambio se Ud. no esta satisfecho.

AFIANZAMIENTO LIMITADO:

El límite de tiempo y la extensión que cubre es limitado.

AFIANZAMIENTO IMPLICITO:

Derechos creados por ley estatal. Deben llenar dos condiciones.

a.) El producto debe estar en estado de funcionamiento o debe tener un letrero que diga "estado actual"

b.) El producto debe ser "apropiado" para la intención de su uso.

CONTRATOS DE SERVICIO

Acuerdos escritos que ofrecen más protección de lo que cubre el afianzamiento.

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TYPES OF WARRANTIES

FULL WARRANTY:

Repairs are made at no charge. The seller will offer a complete refund or free replacement if you are not satisfied.

LIMITED WARRANTY:

The time limit and extent of the coverage is limited.

IMPLIED WARRANTY:

Rights created by state law. Must meet two conditions:

a.) Product must be in working order or labeled "as is."

b.) Product must be "fit" for its intended use.

SERVICE CONTRACTS

Written agreements that offer protection beyond the warranty coverage.

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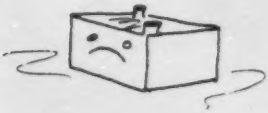
A veces el afianzamiento limitado es llamado afianzamiento prorrateado.

Baterías y llantas son
constantemente vendidos
con este tipo de afianzamiento.



Esto significa que si el producto falla antes del tiempo de funcionamiento, un substituto puede ser comprado a un precio que está ajustado conforme la cantidad de tiempo que estuvo en uso el producto original.

Ejemplo: Una batería de $30. Está afianzada por 3 anos. Si la batería falla despues de dos anos, se cobra a $30/3 anos 0 $10/1 anos.

costo nuevo	$30
utilizado por 2 anos	$20
recibe un credito de al comprar una nueva batería	$10

Sometimes the limited warranty is called a pro-rated warranty.

Automotive batteries and tires are often sold with this kind of warranty.

It means that if the product fails during its expected life time, a replacement can be bought. The price of the new product is adjusted. You have to pay for the amount of time that you used the original product.

Example: $30 battery warranted for 3 years. The battery fails after 2 years. Warranty is pro-rated at $30/3 years or $10/year.

cost new	$30
used for 2 years	- 20
credit towards a new battery	$10
new battery will cost you	$20

ANTES DE COMPRAR CUALQUIER PRODUCTO UN COMPRADOR INTELIGENTE

Necesita saber:

¿Qué productos, parte del producto o funcionamiento está cubierto?

¿Cuanto tiempo dura está garantía? 90 dias, 6 meses, 2 años?

Por quien esta garantizada, por la tienda o la fabrica?

¿Qué se va a hacer en caso de falla?
¿reparo, reintegro, o reemplaza?

¿Qué debe hacer el comprador en caso que halla una falla?

Se debe llamar a una persona del servicio o mandar el producto a un centro de reparación?

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BEFORE PURCHASING ANY PRODUCT, A SMART BUYER

Needs to know:

WHAT product, part of a product, or performance are covered.

HOW LONG does the coverage last? 90 days, 6 months, 2 years?

BY WHOM
The retail store, or manufacturer?

WHAT will be done in case of failure?
repair, replacement, refund?

And what the buyer must do in case of failure.

Do you call for a service person or send the product to a repair center?

UN COMPRADOR INTELIGENTE

Mantien records demonstrando pruebas y fecha de compra.

Sabe los procedimientos que debe seguir para cubrir el afianzamiento.

Compara el afianzamiento en productos similares, antes de comprarlos.

A SMART BUYER.

Maintains records that show proof and date of purchase.

Knows the procedure to follow in obtaining warranty coverage.

Compares warranty coverage on similar products before buying.

PROPÓSITO

El propósito básico del afianzamiento es para proteger al comsumidor.

ASÍ---RECUERDE

Un comprador listo e inteligente

Se proteje de malentendimientos de esta forma:

leyendo las garantias ANTES de comprar.
manteniendo un record que prueba la compra.

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PURPOSE

The basic purpose of a warranty is to protect the consumer.

So ---REMEMBER

Wise and smart buyer

Protect themselves against warranty misunderstandings by:

reading warranties BEFORE they buy.

keeps a record showing proof of purchase.

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GARANTIAS Y AFIANZAS

HOJAS DE TAREA

INSTRUCCIONES:
1. Llene estas hojas de tarea despues de leer el folleto de información.
2. Utilice el folleto de informacion para encontrar las respuestas que usted necesita.

Mas tarde usted tomara un examen sobre este material.

Su profesor(a) tiene la hoja de respuestas para estas hojas de tarea.

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GUARANTEES & WARRANTIES

STUDENT
WORKSHEETS

INSTRUCTIONS: 1. FILL OUT THESE WORKSHEETS AFTER READING THROUGH THE INFORMATION BOOKLET.
2. USE THE BOOKLET TO FIND THE ANSWERS IF YOU NEED TO.

LATER YOU MAY BE GIVEN A QUIZ ON THIS INFORMATION

YOUR TEACHER HAS THE ANSWER KEY FOR THESE WORKSHEETS

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1. Cual es la diferencia entre una garantía y una afianza?
_____

2. Una afianza es una _____ para mantener detrás de la mercancia o el servicio.

3. Enumere cuatro tipos de afianzas. _____, _____, _____, _____.

4. Si un producto es vendido en su "estado actual" tiene un afianzamiento _____.

5. Un afianzamiento prorrateado es un afianzamiento _____ ____.

6. Enumere 3 cosas que hacen los "compradores inteligentes" para asegurar el cubriemiento apropiado de la afianza, si o cuando lo necesitan _____, _____, _____.

7. Enumere 5 preguntas un "comprador inteligente" debe preguntar antes de que comprenda completamente los terminos del afianzamiento. _____, _____, _____, _____, _____.

8. El propósito de la afianza es para _____.

9. Las reparaciones gratuitas o un reembolse total implica que tipo de afianzamiento. _____ _____

10. Un acuerdo escrito para extender una afianza es _____.

1. What is the difference between a guarantee and warranty?
_____

2. A warranty is a _____ to stand behind merchandise or service.

3. List the 4 types of warranties. _____, _____, _____, _____.

4. If a product is sold "as is", it has an _____ warranty.

5. A pro-rated warranty is a _____ warranty.

6. List 3 things "smart buyers" do to insure they will get proper warranty coverage if and when they need it. _____, _____, _____.

7. List the 5 questions a "smart buyer" must ask before they will fully understand warranties. _____, _____, _____, _____, _____.

8. The purpose of a warranty is to _____.

9. Repairs made at no charge, or offer of a complete refund is a _____ warranty.

10. A written agreement to extend a warranty is a _____.

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GARANTIAS Y AFIANZAS

EXAMEN

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GUARANTEES & WARRANTIES

STUDENT

QUIZ

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Examen

Verdadero o Falso

1. _____ _____ Todas las afianzas y garantías son iguales.

2. _____ El mantenimiento de 'records' de compra no son necesario para el cubrimiento de la afianza.

3. _____ Una afianzamiento prorrateado significa que usted paga por el uso del producto mientras estuvo en uso.

4. _____ Un afianzamiento con un límite de tiempo es un afianzamiento completo.

5. _____ Un carro comprado en "estado actual" está abierto pór un afianzamiento implícito.

6. _____ Un comprador inteligente comparará cubrimientos de diferentes afianzamientos antes de comprar productos similares.

7. _____ Un comprador necesita saber que parte del producto esta cubierto por la garantía antes de comprarlo.

8. _____ Si un producto falla mientras está garantizado, el dueño lo manda a servicio y paga este servicio.

9. _____ Una garantía tendra diferentes cubrimientos que un afianzamiento.

10. _____ Un afianzamiento es la promesa de un vendedor de mantenerse detrás de su mercancía o servicio.

Quiz

True or False

1. _____ All warranties and guarantees are the same.

2. _____ Keeping records of purchases is not necessary for warranty coverage.

3. _____ A pro-rated warranty means that you pay for the use of the product while it was in service.

4. _____ A warranty with a time limit on the coverage is a full warranty.

5. _____ A car bought "as is" is covered under an implied warranty.

6. _____ A smart buyer will compare warranty coverage before buying similar products.

7. _____ A buyer needs to know what part of a product is covered by a warranty before it is purchased.

8. _____ If a product fails under warranty the owner sends it to a service center at his/her expense.

9. _____ A warranty will have different coverage than a guarantee.

10. _____ A warranty is a seller's promise to stand behind the merchandise or service.

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PEGAMENTO Y ADHESIVOS

OBJECTIVOS: Sabiendo como comprar el pegamento correcto para un trabajo particular es fácil, si Ud. sigue ciertos pasos simples.

FOLLETO DE INFORMACION

SOBRE

comprando pegamentos
utilizando pegamentos

INSTRUCCIONES: Lea el material en este folleto y utilize la información para llenar la hoja de tarea para este módulo.

Por favor , no escriba en este folleto

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SMART BUYING SERIES

GLUES & ADHESIVES

Objectives: Knowing how to buy the correct glue for a particular job is easy if you follow a few simple steps.

INFORMATION BOOKLET

about BUYING GLUES
USING GLUES

INSTRUCTIONS:

READ THE MATERIAL IN THIS BOOKLET AND USE THE INFORMATION TO FILL OUT THE WORKSHEETS FOR THIS MODULE

Please do not write in this booklet

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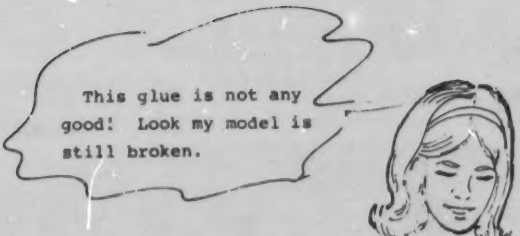
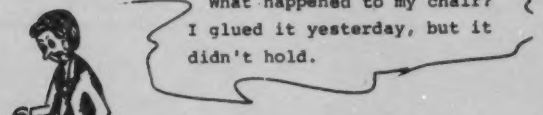
¡Este pegamento no es bueno! Mire mi avión aún está roto.

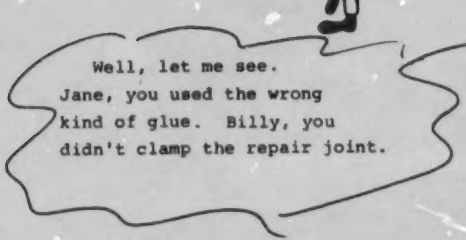
¿Que sucedió con mi silla? La pegué ayer, pero el pagamento no aguantó.

Bueno, déjeme ver Jane. Usted uso un tipo de pegamento que no era correcto, y Billy, usted no sujéto la ensambladura de reparación.

Déjeme decirle algunas cosas sobre pegamentos.


This glue is not any good! Look my model is still broken.


What happened to my chair? I glued it yesterday, but it didn't hold.


Well, let me see. Jane, you used the wrong kind of glue. Billy, you didn't clamp the repair joint.

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Let me tell you a few things about glue.

CONSIDERACIONES AL COMPRAR

Antes de comprar cualquier tipo de adhesivo o pegamento decida sobre que tipo de materail lo va a utilizar.

¿vidrio? ¿madera? ¿porcelana? ¿plastico?

Luego decida que tipo de pegamento es requerido.

Precaución: Hay muchas compañías haciendo pegamentos bajo muchos nombres y marcas diferentes. La seleción de pegamentos o adhesivos apropiados pueden ser dificil.

BUYING CONSIDERATION

Before buying any glue or adhesive, decide what kind of material it will be used on:

glass? wood? china? plastic?

Then decide on which kind of glue is required.

Caution: There are many companies making glue under many different brand names. Selecting the proper glue or adhesive can be confusing. Carefully read the label to determine specific applications and directions.

Tipos de Pegamentos y Adhesivos

Diferentes tipos de pegamentos y adhesivos son utilizados para diferentes tipos de trabajo. Aquí hay algunos de los tipos más comunes con un ejemplo de su uso.

1. "pegamento de multiuso blanco"	utilizado para madera, papel, cartulina, cuero, y productos de tela.
2. goma de resina	metales, madera, vidrio, concreto, y plásticos.
3. almástiga	para aplicar con baldosa, concreto, artesonado, y pisos.
4. cemento de contacto	para ensambladura instantáne de materiales desde papel hasta metal.
5. silicone	para sellar tinas, ventanas, y ensabladuras de "fluido"

KINDS OF GLUES & ADHESIVES

Various glues or adhesives are used for different jobs. Here are some of the common kinds with an example of their use.

1. "White" multipurpose glue	Used for wood, paper, cardboard, leather, cloth products.
2. Epoxy	Bonds metals, wood, glass, ceramics, concrete, plastics.
3. Mastics	For applying ceramic tiles, concrete, paneling flooring
4. Contact Cement	For "instant" joining of many materials from paper to metal.
5. Silicone	For sealing bathtubs, windows, & "fluid" types of joints.

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PROBLEMAS DEL USUARIO
O
COSAS QUE HAY QUE CONSIDERAR

Instrucciones:

¿Dicen las instrucciones del contenedor de pegamento que hay que sujetar las partes?

Herramientas:

¿Tiene usted las herramientas necesarias?

Tiempo de Ensamblar:

Cual es el tiempo de ensamble (puede variar desde instántaneo a 24 horas, o más)

Mezclando:

¿Debe mezclar dos químicos para el pegamento? (Estos pueden ser un desorden, y es muy fácil mesclar más de lo necesarrio para el trabajo.)

Duración de Estante:

¿Cual es la duración de estante del pegamento? (Algunos duran 2 años o más una vez abiertos, otros se endurecerán dentro del tubo después de que es roto el sello.)

User Problems or Things to Consider

Instructions: - preparation of surfaces?
- compatability of adhesive and material to be joined?

Do the instructions on the glue container say to clamp the parts?

Tools:

Do you have the necessary tools?

Set-up Time:

What is the set-up time (It can vary from instant to 24 hours, or more.)

Mixing:

Do you have to mix two chemicals together to form the glue? (These can be messy, and it's easy to mix more then necessary for the job.)

Shelf Life:

What is the shelf life of the glue? (Some will last one month or 2 years or more once opened. Others will harden in the tube once the seal is broken.

SEGURIDAD

RESPIRANDO

Utilize algunos pegamentos solamente en areas bien ventiladas. Respirando ciertos vapores puede ser peligroso.

PIEL

Algunos pegamentos reaccionan con su piel. Lea las precauciones enumeradas por el fabricante. Antes de utilizar la goma, averique como protejer su piel.

OJOS

¿Qué debe de hacer para prevenir el arruinar sus ojos. ¿Tiene Ud. el equipo de seguidad necesario?

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SAFETY

BREATHING

Use some glues only in well vent lated areas. Breathing the fumes can be very dangerous.

SKIN

Some glues will irritate your skin. Read the special precautions listed by the manufacturer. Find out, how to protect your skin before you use the glue.

EYES

What should you do to prevent damage to your eyes? Do you have the necessary safety wear?

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demandas del fabricante:

Lea las demandas e instrucciones antes de comprar.

preparación de la ensambladura:

Algunos pegamentos requieren una limpieza especial y técnicas de aplicación antes que se aplican. (Si Ud. no tiene estos materiales, la compra de estos aumentará los costos.)

limpieza:

procesos de limpieza,

¿Hay algún tipo de precaución que se recomienda? Algunos pegamentos contienen químicos muy poderosos que arruinan los materiales cuando hay contacto con éstos.

Manufacturer claims:

Read the claims, instructions and warranty before buying.

Joint Preparation:

Some glues require special cleaning and application techniques before they are applied. (If you don't have these materials, buying them is an extra expense.)

Cleaning:

Clean up procedures,

Are any special precautions recommended? Some glues contain powerful chemicals that will damage materials they come in contact with.

Así---Recuerde

Hay diferentes tipos de pegamentos y adhesivos.

Un comprador inteligente leerá todas las instrucciones y aplicaciones cuidadosamente antes de comprar.

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So --- Remember

There are many different glues and adhesives available.

A smart buyer will carefully read the instructions and applications before buying.

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PEGAMENTO Y ADHESIVOS

HOJAS DE TAREA

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GLUES & ADHESIVES

STUDENT
WORKSHEETS

INSTRUCTIONS: 1. FILL OUT THESE WORKSHEETS AFTER READING THROUGH THE INFORMATION BOOKLET.
2. USE THE BOOKLET TO FIND THE ANSWERS IF YOU NEED TO.

LATER YOU MAY BE GIVEN A QUIZ ON THIS INFORMATION

YOUR TEACHER HAS THE ANSWER KEY FOR THESE WORKSHEETS

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1. Antes de comprar cualquier pegamento o adhesivo un comprador inteligente decide _____.

2. Un pegamento blanco es utilizado sobre _____.

3. Goma de resina requiere la mezcla de un (a) _____ y un (a) _____.

4. _____ daran una ensambladura instantanea.

5. Las tinas de bano y las ventanas requieren _____ que es a prueba de agua.

6. _____ es el tiempo que se toma para que el ensamble de la goma se endurezca.

7. _____ es el tiempo que puede ser utilizado un pegamento, una vez que el sello se haya roto.

8. Algunos pegamentos requieren _____ para asegurar un buen ensamble.

9. Algunos pegamentos requieren _____ y _____ tipos de tecnicas antes de ser aplicados.

10. Enumere tres medidas de precaucion cuando utilize pegamentos. _____, _____, _____.

11. Antes de comprar cualquier pegamento enumere tres consideraciones que debe tomar en cuenta cuando compre. _____, _____, _____.

1. Before buying any glue or adhesive a smart buyer decides _____.

2. A white glue is used on _____.

3. Epoxy requires the mixing of a _____ and a _____.

4. _____ will give instant joint.

5. Bathtubs and windows require a _____ which is waterproof.

6. _____ is the time it takes for the glue joint to become strong.

7. _____ is the time a glue will remain usable once the seal is broken.

8. Some glues require _____ to insure a good glue joint.

9. Some glues require _____ and _____ techniques before being applied.

10. List three safety precautions when using glues. _____, _____, _____

11. Before buying any glue, list three buying considerations. _____, _____, _____

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PEGAMENTO Y ADHESIVOS

EXAMEN DE ESTUDIANTE

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GLUES & ADHESIVES

STUDENT

QUIZ

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EXAMEN

1. _____ Muchos pegamentos y adhesivos funcionan sobre los mismos materiales.

2. _____ La acción de sujetar se utiliza para hacer la ensambladura mas resistente.

3. _____ Los pegamentos se venden bajo varios diferentes nombres y marcas.

4. _____ Pegamento de resina requiere la mezcla de dos materiales para hacer el pegamento.

5. _____ Las ventanas son selladas de major forma con pegamento de resina.

6. _____ El cemento de contacto tiene un tiempo de endurecer muy rapido.

7. _____ Algunos pegamentos reaccionarán con su piel.

8. _____ Los pegamentos tienen una duración de estante muy larga.

9. _____ Algunos pegamentos dañarán los materiales con los cuales tienen contacto.

10. _____ Las instrucciones son distintas para diferentes tipos de pegamentos.

Quiz

1. _____ Many glues and adhesives will work on the same materials.

2. _____ Clamping is used to strengthen the glue joint.

3. _____ Glues are sold under many different brand names.

4. _____ Epoxy requires the mixing of two materials to make the glue.

5. _____ Windows are best sealed with an epoxy.

6. _____ Contact cement has a quick set-up time.

7. _____ Some glues will irritate your skin.

8. _____ All adhesives have a long shelf life.

9. _____ Some glues will damage the materials they come in contact with.

10. _____ The instructions are different for different glues.

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UTENSILIOS PARA LA PROTECCION EN CONTRA DE FUEGOS

OBJECTIVOS: Los extinguidores de fuego y los detectòres de humo son differentes. Sea astuto, sepa que son y cuales comprar.

FOLLETO DE INFORMACIÓN
SOBRE EXTINGUIDORES DE FUEGO
Y
DETECTORES DE HUMO

INSTRUCCIONES: Lea el contenido de este folleto y use la información para completar las hojas de tarea para este módulo.

POR FAVOR NO ESCRIBA EN ESTE FOLLETO

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SMART BUYING SERIES

FIRE PROTECTION DEVICES

Objectives:

Fire extinguishers and smoke detectors are different. Be smart. Know what they are and which to buy.

INFORMATION BOOKLET
about FIRE EXTINGUISHERS
and
SMOKE DETECTORS

INSTRUCTIONS:

READ THE MATERIAL IN THIS BOOKLET AND USE THE INFORMATION TO FILL OUT THE WORKSHEETS FOR THIS MODULE

Please do not write in this booklet

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¿QUÉ ES UN EXTINGUIDOR?

. . . Es un instrumento usado para combatir fuegos

¿PORQUE NECESITA UN EXTINGUIDOR DE FUEGO?

. . . Los fuegos pueden ocurrir en hogares, garajes, barcos, automóviles, y muchos otros lugares

. . . Impedir que fuegos pequeños se conviertan en incendios mayores

. . . Combatir los fuegos hasta que llegen los bomberos

¿CÓMO CONOCER CUAL TIPO COMPRAR?

¿A o ABC o BC?

. . . Conocer el tipo o clase que comprar es importante

FACTS YOU NEED TO KNOW WHEN BUYING A

FIRE EXTINGUISHER

WHAT IS A FIRE EXTINGUISHER?

. . . . IT IS A TOOL USED TO FIGHT FIRES

WHY DO YOU NEED A FIRE EXTINGUISHER?

. . . FIRES CAN OCCUR IN HOUSES, GARAGES, BOATS, CARS AND LOTS OF OTHER PLACES

. . . KEEP SMALL FIRES FROM BECOMING LARGE

. . . FIGHT FIRES UNTIL FIRE DEPARTMENT ARRIVES

HOW DO YOU KNOW WHAT TYPE TO BUY?

A or ABC or BC ?

. . . KNOWING THE TYPE OR CLASS TO BUY IS IMPORTANT

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DIFERENTES CLASES DE EXTINGUIDORES SE USAN PARA DIFERENTES CLASES DE FUEGOS

ESTAS SON LAS CLASES DE FUEGOS

FUEGOS DE CLASE A

Madera, papel, tela tapicería, o muchos plásticos.

usé el extinguidor de fuego con el símbolo

triángulo verde

FUEGOS DE CLASE B

son abastecidos por grasa de la cocina, pinturas, aceite, gasolina, o flúidos de limpieza

cuarado rojo

FUEGOS DE CLASE C

son abastecidos por motores eléctricos, herramientas, o utensilios

círculo azul

DIFFERENT EXTINGUISHERS MUST BE USED FOR EACH CLASS OF FIRE

THESE ARE THE CLASSES OF FIRES

CLASS A FIRES

wood, paper, cloth, upholstery or many plastics.

Use Extinguisher With This Symbol

GREEN TRIANGLE

CLASS B FIRES

fueled by kitchen greases, paints, oil, gasoline or cleaning fluids.

RED SQUARE

CLASS C FIRES

in or near electric motors, tools or appliances.

BLUE CIRCLE

¿CUAL ES EL EXTINGUIDOR CORRECTO ?

PARA LOS FUEGOS DE CLASE A

use extinguidores de agua. Estos enfrian y remojan el material que está quemandose.

NUNCA USE EN

- fuegos de clase B El líquido, grasa, o pintura flota sobre el agua y propaga el fuego.
- fuegos de clase C La corriente eléctrica puede viajar a travez del agua y causar una sacudida eléctrica.

PARA LOS FUEGOS DE CLASE B o C

use un extinguidor de dioxido de carbono o químico seco. Cubren y sofocan las llamas con polvo.

PARA LOS FUEGOS DE CLASE A B o C

extinguidores de objetos multiples de químicos secos sofocan las llamas de la mayoría de los fuegos con seguridad,

o

Extinguidores de gas licuado sofocan y enfrian las llamas.

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WHICH IS THE RIGHT EXTINGUISHER?

FOR CLASS A FIRES

use WATER type extinguishers.
They cool and soak burning material.

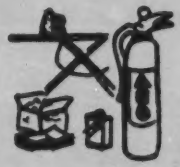
NEVER USE ON

- class B fires. The liquid, grease or paint floats on water and spreads the fire.
- class C fires. The electric current can travel through the water and cause a shock.

FOR CLASS B or C FIRES

use CARBON DIOXIDE
or
DRY CHEMICAL
type extinguishers.
They blanket and smother flames with powder.

FOR CLASS A B or C FIRES



MULTIPURPOSE DRY CHEMICAL extinguishers smother flames of most fires safely,
or
LIQUEFIED GAS extinguishers smother and cool flames.

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CONSIDERE ESTOS HECHOS ANTES DE COMPRAR

A

Extinguidores de agua	VENTAJAS	DESVENTAJAS
- Tiene un alcance de rociada de 40 pies	- Su alcance de rociado es el más largo de todos los extinguidores.	- Son útiles solamente para fuegos de clase A
- Muchas veces están disponibles en un tamaño de 2 1/2 galones.	- El material incendiado es remojado.	- Pueden congelarse.
- Necesita cerca de 1 minuto para descargarse completamente.	- Es fácil rellenar los modelos de bombas.	- Pueden remojar la propiedad.

B C

EXTINGUIDORES DE QUIMICOS SECOS	VENTAJAS	DESVENTAJAS
- Sus tamaños varían de 2 a 30 libras.	- no se congelan	- Pueden dejar una capa de polvo en la propiedad.
- El alcance de rociada es de 5 a 20 pies		- Pueden causar daños a los utensilios.
- Necesitan de 5 a 25 segundos para descargarse completamente.		- Los químicos pueden causar dano a los pulmones
- Son los más baratos		

B C

EXTINGUIDORES DE DIOXIDO DE CARBONO (CO_2)	VENTAJAS	DESVENTAJAS
- Sus tamaños varían de 2 1/2 a 20 libras.	- No se congelan	- No hay protección contra estos.
- El alcance de rociada es de 3 a 8 pies	- No dejan residuos que limpiar	- Pueden dificultar la respiración.
- Necesitan de 8 a 30 segundos para descargarse completamente.		- Pueden causar chispas estáticas que pueden encender vapores livianos de un gas.
- Son los de mayor costo		

CONSIDER THESE FACTS BEFORE BUYING

A

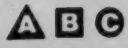
WATER extinguishers	ADVANTAGES	DISADVANTAGES
- Spray range is about 40 feet. - Often available in 2½ gallon size. - Take about 1 minute to empty	- Longest spray range of all extinguishers. - Burning material is soaked. - Pump models are easy to refill.	- Good only for Class A fires. - Can freeze. - Can soak property.

B C

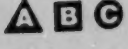
DRY CHEMICAL extinguishers		
- Range in size from 2 to 30 pounds. - Spray range is 5 to 20 feet. - Take 8 to 25 seconds to empty. - Least expensive of all.	- Won't freeze.	- May leave a blanket of "dust" on property. - Can damage appliances. - Chemicals can harm lungs.

B C

CARBON DIOXIDE (CO_2) extinguishers		
- Size varies from 2½ to 20 pounds. - Spray range is 3 to 8 feet. - Take 8 to 30 seconds to empty. - Expensive.	- Won't freeze. - No mess to clean up.	- No reflash protection. - Can make breathing difficult. - Can cause static spark which could light gas vapors.



EXTINGUIDORES DE OBJECTIVOS MULTIPLES DEL QUIMICO SECO	VENTAJAS	DESVENTAJAS
- Sus tamaños varían de 2 a 30 libras. - Su alcance de rociada es hasta de 20 pies - Necesita de 8 a 25 segundos para descargarse completamente. - Cuestan un poço mas que el tipo de quimico seco.	- No se congelan	- Dejan una capa de «polvo» que debe ser limpiada de inmediato. - Pueden causar daño a los motores de utensilios. - Inhalación de grandes cantidades del químico irrita los pulmones.



EXTINGUIDORES DE GAS LICUADO	VENTAJAS	DESVENTAJAS
- Son disponible en tamaños de 2 1/2 a 5 libras - Su alcance de rociada es hasta de 8 pies. - Necesitan cerca de 8 segundos para descargarse completamente. - Son los más caros de todos.	- Son livanos y faciles para despues manejar. - No se congelan - no es necessario limpiar despues de usarlos. - No correon las partes de los motores o el alambrado	- Despues de usarlos en una area sin ventilación, el aire pudiese ser peligroso para respirar.

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A B C

MULTIPURPOSE DRY CHEMICAL extinguishers	ADVANTAGES	DISADVANTAGES
- Size varies from 2 to 30 pounds. - Sprays up to 20 feet. - Take 8 to 25 seconds to empty. - Cost slightly more than dry chemical type.	- Won't freeze.	- They leave a blanket of "dust" which must be cleaned up at once. - May damage motors on appliances, etc. - Breathing in large amounts of the chemicals irritates lungs.

A B C

LIQUEFIED GAS extinguishers		
- Available in 2½ to 5 pound sizes. - Spray range is up to 8 feet. - Take about 8 seconds to empty. - Most expensive of all.	- Light and easy to handle. - Won't freeze. - Require no cleanup after use. - Won't corrode engine parts or wiring.	- After use in unvented area, air may be hazardous to breathe.

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DONDE USAR LOS DIFERENTES TIPOS DE EXTINGUIDORES

RIESGOS POSSIBLES DE FUEGO

en la SALA hay televisiones, muebles, cortinas, alfombras, ect.

en la COCINA hay grasa, basura, utensilios electricos, ect.

en el CUARTO DE UTILIDADES hay pintura, ropa, lavadora/secadora, ect.

en el GARAJE hay gasolina, aceite, cajas, ect.

CONSIDERÉ

1. Tipos posibles de fuegos, papel, electricos, pinturas, ect.
2. ¿Quién estaría usando el extinguidor? (estatura, y edad de los miembros de la familia).
3. ¿Cuantos extinguidores necesitará Ud.? (para la casa, el barco, el automovil?)

WHERE TO USE THE DIFFERENT TYPES OF EXTINGUISHERS

POSSIBLE FIRE HAZARDS in LIVING ROOM: TV's, furniture, drapes, carpet, etc.

in KITCHEN: grease, trash, electrical appliances, etc.

in UTILITY ROOM: paint, clothes washer/dryer , etc.

in GARAGE: gasoline, oil, boxes, etc.

OUTSIDE: CAR, BOAT, TREES

CONSIDER

1. Possible types of fires paper, electrical, paint etc.
2. Who will be using the extinguisher: size and age of family members.
3. How many extinguishers do you need? (for house, boat, car?)

CUANDO COMPRE UN EXTINGUIDOR - BUSQUE ESTOS DETALLES

Para uso en la casa ....

1. Compre un extinguidor construido de metal. Son caros pero pueden ser rellenados cuando sea requerido. Los extinguidores plásticos pueden ser peligrosos y tener escapes.

2. Verifique el monómetro

   Debe leer en la escala de «normal»

3. Busque la etiqueta de UL o FM

   Estas le indican que los extinguidores satisfacen las normas requiridas.
   UL - Laboratório de aseguradores
   FM - Sistema de Fábrica Mutua

4. Lea la etiqueta

   Necesita saber:

   - el tipo del fuego
   - instrucciones de operacion
   - magnitúd del fuego que puede ser controlado.

ASI: ESTÉ PREPARADO PARA UN FUEGO

Un extinguidor puede salvar

su vida
su barco
su casa
etc.

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WHEN YOU BUY AN EXTINGUISHER - LOOK FOR THESE THINGS

For Home use ....

1. BUY AN ALL METAL EXTINGUISHER

✓ Cost is high, but it can be refilled as required. Plastic extinguishers can be dangerous and may leak.

2. CHECK THE PRESSURE GAUGE

✓ It should read in the "normal" range.

3. LOOK FOR U_L or FM SEAL

✓ These tell you that the extinguisher meets required standards.
U_L = Underwriters Laboratory
FM = Factory Mutual System

4. READ THE LABEL

✓ You need to know:
- kind of fire A B C
- operating instructions
- size of fire that can be controlled

So: BE READY FOR A FIRE

An Extinguisher could save
your life
your boat
your home
etc.

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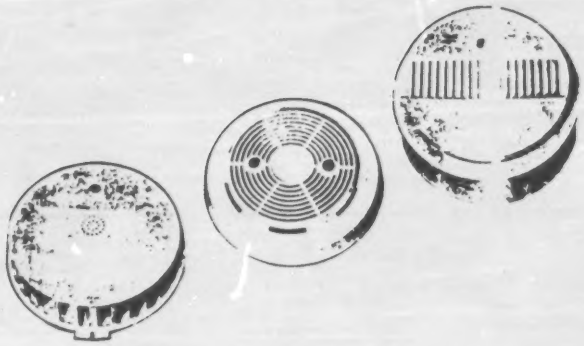
HECHO QUE DEBE SABER AL COMPRAR UN DETECTOR DE HUMO

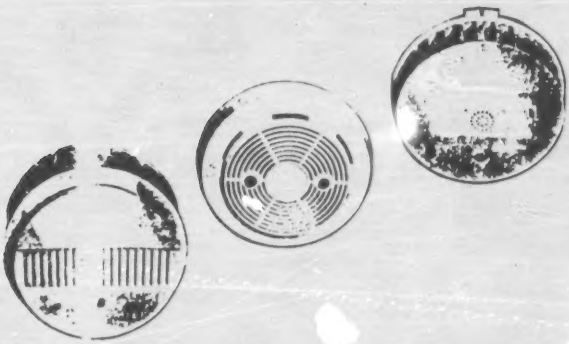


¿QUÉ SON LOS DETECTORES DE HUMO?

- Hacen un ruido alto cuando el humo entra en ellos y avisan a la gente
- avisan sobre fuegos, muchas veces antes de que se propagen
- despiertan a gente que están durmiendo
- detectan fuegos en los soltanos o otros lugares remotos
- le avisan sobre un fuego en la casa or el garaje si Ud. está afuera en el jardi..

FACTS YOU NEEDTO KNOW WHEN BUYING A

SMOKE DETECTOR



What are SMOKE DETECTORS ?

- they make a loud noise when smoke gets into them & warn people
- they warn about fire, often before it spreads
- they wake up sleeping persons
- they detect fires in basements or other remote places
- they warn you about a house or garage fire if you are outside in the garden

ESCOJIENDO DETECTORES DE HUMO

Piense en:

Donde necesitan ser ubicado: ¿el techo de la cocina?
¿el techo de la sala?
¿escalera?

Dimensiones de su casa o apartamento: cada piso de una casa podría necesitar uno o más.

Instalación del detector: Algunos necesitan un enchufe eléctrico

algunos requiren solamente pilas.

VERIFIQUE

✓ Etiqueta — Esta le dice que ha sido examinada.

✓ Señal de mal funcionamiento — Esta le dice que la pila o bulbo necesita ser reemplazado.

✓ Alarma — ¿Es suficientemente alta?
¿Puede ser ajustada?

✓ Mantenimiento — ¿Puede limpiarse?
¿Puede reemplazar piezas facilmente?
¿Tienen un boton de prueba?

✓ Garantía — ¿El fabricante lo garantiza por varios años?

CHOOSING SMOKE DETECTORS

Think about:

- where they need to be placed: kitchen ceiling?
  living room ceiling?
  stairway?
- size of your home or apartment: each floor of a house may need one or more.
- installation of detector: some need an electrical power outlet
  some require only batteries.

CHECK

✓ Label → This tells you that its design been tested.

✓ Malfunctioning signal → This tells you that the battery or bulb may need replacing

✓ Alarm → Is it loud enough?
Can it be adjusted?

✓ Maintenance → Can it be cleaned?
Can you easily replace parts?
Does it have a test button?

✓ Warranty → Does the manufacturer guarantee it for a number of years?

USTED DEBE SABER QUE

HAY DOS TIPOS DE DETECTORES

1. DETECTORES DE IONIZACIÓN

Estos son mejores para fuegos de flamas causadas muchas veces por riesgos de papel o cortinas de ventanas

2. DETECTORES FOTOELÉCTRICOS

Son mejor para fuegos sin flamas como un cigarillo encendiendo una alfombra o sofa

NOTA: LOS DOS TIPOS DE DETECTORES PROVEEN UNA BUENA PROTECCIÓN, PERO INSTALE UNA COMBINACION DE AMBOS EN LOS LUGARES MAS NECESITADOS.

YOU SHOULD KNOW

THERE ARE TWO KINDS OF DETECTORS

1. IONIZATION DETECTORS

These are best for flaming fires often caused by paper or window drape hazards

2. PHOTOELECTRIC DETECTORS

These are best for smoldering fires such as a cigarette burning a rug or sofa.

NOTE: BOTH TYPES OF DETECTORS PROVIDE GOOD PROTECTION, BUT INSTALL A COMBINATION OF EACH IN THE MOST NEEDED PLACES.

ASÍ, RECUERDE

INSTALE los detectores donde pueden hacer el mejor bien

MANTENGA los detectores y verifiquenlos de vez en cuando

ENSEÑE a los miembros de la familia su significado

PRACTIQUE simulacros contra fuegos

SO REMEMBER

INSTALL detectors where they can do most good

MAINTAIN detectors and check them occasionally

TEACH family members what they mean

PRACTICE fire drills

BE PREPARED

BUY WISELY

Check the cost of comparable
smoke detectors & fire extinguishers
BEFORE BUYING.
Shop Around---catalogues
stores
etc.

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SERIE PARA COMPRAR INTELIGENTEMENTE

UTENSILIOS PARA LA PROTECCION EN CONTRA DE FUEGOS

HOJA DE TAREAS PARA LOS ESTUDIANTES

Instrucciones: 1) Complete estas hojas de tareas luego de leer el folleto informativo.

2) Use el folleto para encontrar los repuestas si es necessario

Más tarde una prueba puede ser administrada sobre esta información.

Su professor(a) tiene la clave para estas tareas.

Developed by a grant from the R. C. U. of the Texas Education Agency.

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SMART BUYING SERIES

FIRE PROTECTION DEVICES

STUDENT
WORKSHEETS

INSTRUCTIONS: 1. FILL OUT THESE WORKSHEETS AFTER READING THROUGH THE INFORMATION BOOKLET.
2. USE THE BOOKLET TO FIND THE ANSWERS IF YOU NEED TO.

LATER YOU MAY BE GIVEN A QUIZ ON THIS INFORMATION

YOUR TEACHER HAS THE ANSWER KEY FOR THESE WORKSHEETS

Developed by a grant from the R. C. U. of the Texas Education Agency.

Escriba los repuestas correctas

1. ¿Cuales son las tres clases de estinguidores de fuego?

2. Para unos fuego por cause eléctric Ud. necesita un extinguidor de fuego de clase _____.

3. Para incendios por causa de aceite, gasolina y grasa Ud. necesita un extinguidor de fuego de clase _____.

4. Para incendios por causa de papeles, telas y madera Ud. necesita un extinguidor de fuego de clase _____.

5. Mencione tres desventajas de un extinguidor de fuego de clase A.

6. ¿Por qué necesita considerar el tamano del extinguidor de fuego?

7. ¿Qué tipo de extinguidor de fuego es mahot para un automovil o un barco?

8. ¿Es prudente tener mas de un extinguidor de fuego en un hogar?

9. ¿Qué cuatro cosas necesita revisar al comprar un extinguidor de fuego?

10. Las dos clases de detectores de humo son:

    (a) aquellos que detectan _____.

    (b) aquellos que detectan _____.

11. Todos los detectores de humo necesitan una fuente de energia. ¿Cuales son las dos fuentes usuales?

12. ¿Qué seis cosas necesitan ser revisadas al comprar un detector de humo?

Complete el siguiente juego de palabras llenando los espacios en ambos lados de las letras. Las palabras pueden hallarse en el material que Ud. acabo de leer.

Write in the Correct Answers

1. List three classes of fire extinguisher? _____

_____

_____

2. For electrical fires you need a class _____ fire extinguisher.

3. For oil, gasoline and grease fires you need a class _____ fire extinguisher.

4. For paper, cloth and wood fires you need a class _____ fire extinguisher.

5. Give three disadvantages of class A fire extinguishers.

_____

_____

_____

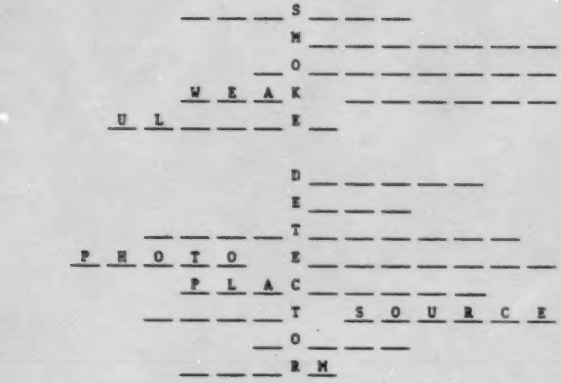
6. Why do you need to consider the size of a fire extinguisher? _____

_____

7. What type of fire extinguisher is best for a car or boat? _____

8. Why is it wise to have more than one fire extinguisher in a home? _____

_____



Do these help?

alarm
drapes
easy
ionization
light source
loud
malfunctioning
maintenance
photo electric
placement
sensing
UL label
weak batteries

14.

blue
classes
device
extinguish
gauge
green
kinds
kitchen
location
multi purpose
needs
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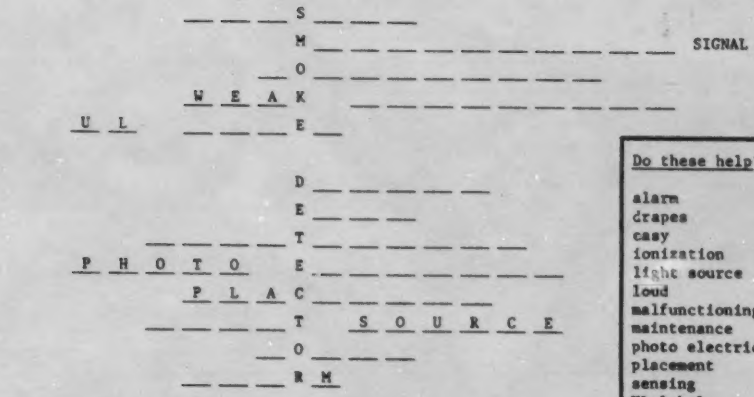
refillable
size
type



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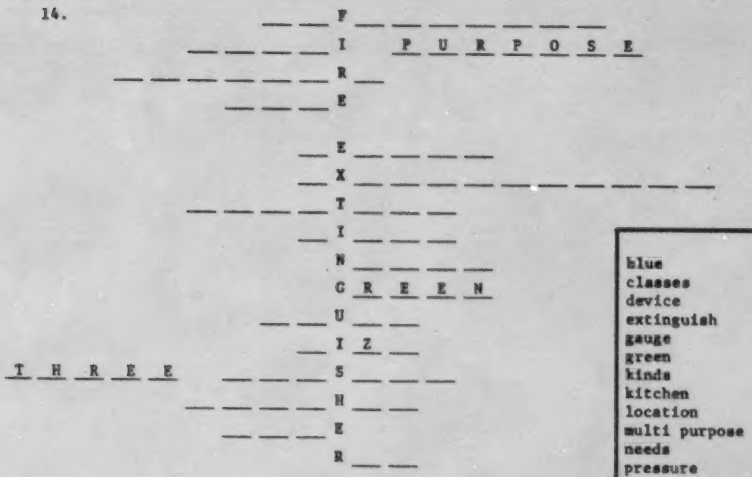

blue
classes
device
extinguish
gauge
green
kinds
kitchen
location
multi purpose
needs
pressure
red
refillable
size
type

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SERIE PARA COMPRAR INTELIGENTEMENTE

UTENSILIOS PARA LA PROTECCION EN CONTRA DE FUEGOS

PRUEBA PARA EL ESTUDIANTE

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SMART BUYING SERIES

FIRE PROTECTION DEVICES

STUDENT

QUIZ

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Prueba al estudiante

	Cierto	Falso	(Excriba "V" para verdadero o "F" para Falso)
1.			Al comprar un estinguidor de fuegos es importante considerar el tamaño y el tipo.
2.			Existen diferentes extinguidores de fuegos para diferentes tipos de incendios.
3.			Los incendios han sido clasificados en clases por expertos en la prevención de incendios.
4.			Un fuego de tipo C es por causa eléctrica.
5.			Un extinguidor de fuego A B C de objetivo multiple se puede utilizar en toda clase de fuegos.
6.			An tes de comprar un detector de humo Ud. debe evaluar las necesidades de su hogar.
7.			Dos tipos de detectores son el fotoeléctrico y el ionizante.
8.			La etiqueta UL significa que la unidad ha sido examinada.
9.			A los detectores de humo se les agotan las pilas o comiente electrica doméstica.
10.			La combinación más segura es instalar ambos tipos de detectores de fuego.

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Quiz

	True	False	(Write T for true or F for false)
1.			When buying a fire extinguisher the size and type are important considerations.
2.			There are different fire extinguishers for different fires.
3.			Fires have been classified by fire prevention experts into classes.
4.			A class C fire is electrical.
5.			A multipurpose fire extinguishers A B C can be used on all fires.
6.			Before buying a smoke detector you should evaluate your home's needs.
7.			Ionization and photoelectric detectors are the two types.
8.			The UL label means that the unit has been tested.
9.			Smoke detectors operate on batteries or household current.
10.			The safest combination of smoke and fire detectors is to install both types of fire detectors.

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CASAS Y APARTAMENTOS CON ENERGIA EFICIENTE

Objetivos: Algunas cosas que considerar que pueden ayudarle a conservar los costos de la energía cuando vd. alquila o compra un lugar donde vivir.

FOLLETO DE INFORMACIÓN

sobre: conservando energía
aislamiento efectivo
calefacción eficiente

INSTRUCCIONES:

Lea el material en este folleto y útilice la información para llenar las hojas de tarea para este módulo.

Por favor no escriba en este folleto.

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ENERGY EFFICIENT HOMES & APARTMENTS

Objectives: Things to consider that may conserve energy costs when renting or buying somewhere to live.

INFORMATION BOOKLET

about ENERGY SAVING
EFFECTIVE INSULATION
EFFICIENT HEATING

INSTRUCTIONS:

READ THE MATERIAL IN THIS BOOKLET AND USE THE INFORMATION TO FILL OUT THE WORKSHEETS FOR THIS MODULE

Please do not write in this booklet

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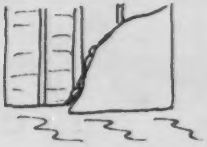
¿Por qué hace tanto frío en esta, habitación?

Pues, no solo te quedes sentado allí, busca alrendedor hasta encontrar la fuente del problema. Podría ser...

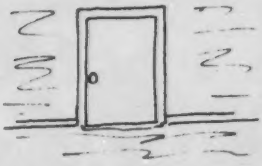
el horno

el aislamiento de paredes



las ventanas

un escape de aire alrededor de las puertas.



Las habitaciones frías pueden ser causadas por falta de calefacción, o por calor que se escapa.

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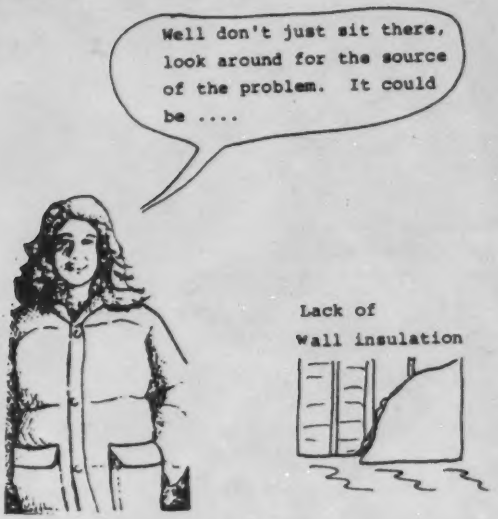

Well don't just sit there, look around for the source of the problem. It could be ....
A poorly functioning furnace.
Lack of wall insulation
Loose fitting windows
Air leakage around the doors.

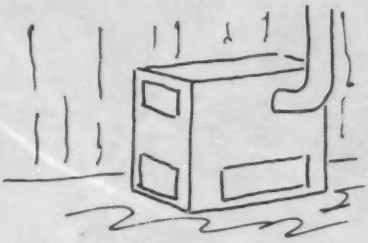
Cold rooms can be caused by a lack of adequate heat, or by escaping heat.

EL HORNO

¿Está obteniendo suficiente calor este cuarto?

Verifique la posición y condición del termostato.

Debería localicarse en paredes internas y libre de chiflones



Dele servicio al horno. Equipo que se encuentra en buenas condiciones de trabajo es más económico para operar.

Verifique el filtro de succión de aire del horno.

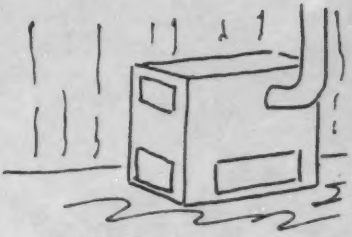
Un filtro congestionado resulta en un sistema ineficiente.

THE FURNACE

Is the room getting enough heat?

Check the setting and condition of the thermostat.

It should be located on an inside wall, and free from drafts.



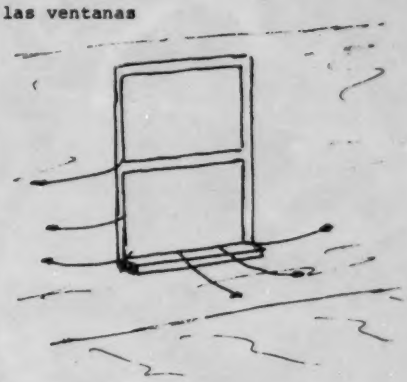
Have the furnace serviced. Equipment that is in good working condition is cheaper to operate.

Check the furnace air intake filter.

A plugged filter results in an inefficient system.

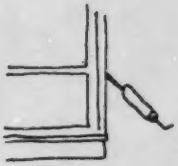
VENTANAS

Verifique los escapes de aire
alrededor de las ventanas



Verifique:

- zócalo de madera para el ajuste apropiado
- macilla y pintura para las rajaduras



La macilla puede ser aplicada alrededor del marco de la ventana para tapar escapes de aire.

Weather stripping, que es un material flexible parecido a la macilla, puede ser utilizado para rellenar las rajaduras.

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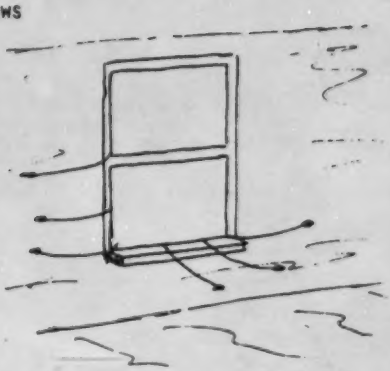
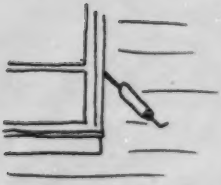
WINDOWS

CHECK FOR AIR LEAKS AROUND WINDOWS

Check the:

- wood sash for proper fit
- putty and paint for cracks





Caulking can be applied around the window frame to plug air leaks.

Caulking, which is a clay-like flexible material, can be easily pressed into cracks.

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AISLAMIENTO DE VENTANAS

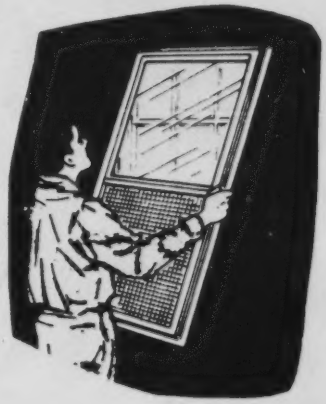
El mejor aislamiento de ventanas se logra con espacios de aire muerto. Este aire inmóvil (muerto) no transferirá aire facilmente.

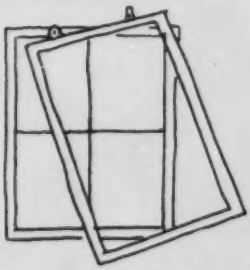
Ventanas de tormenta pueden ser:

una combinación de aluminio

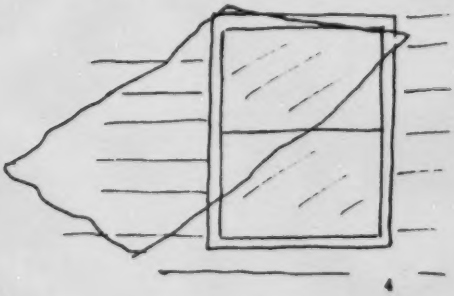
o

otra ventana que está fijada sobre el exterior de la casa.





Una ventana de tormenta provisional puede ser construida prendiendo una hoja transpanente de plástico sobre la parte exterior de la ventana.



Fije el plástico con fajas de madera y clavos pequeños.

WINDOW INSULATION

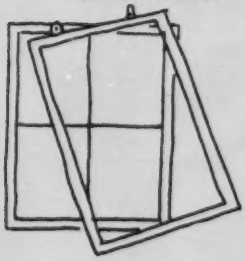
The Best window insulation is a dead air space. This very still (Dead) air will not transfer heat easily.

Storm windows can be:

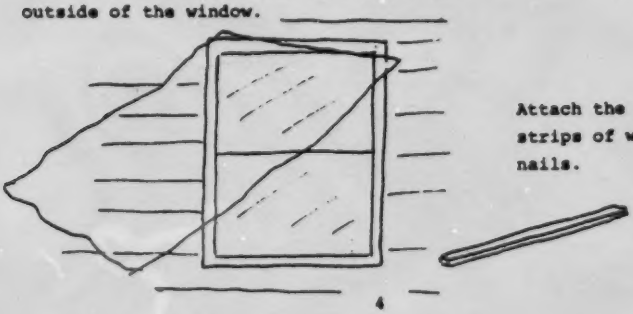
aluminum combination

or

another window that is attached over the outside of the house.



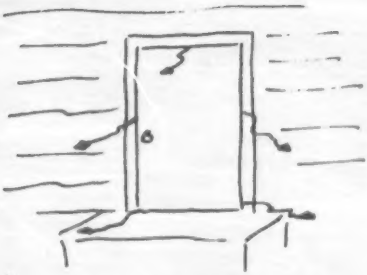
A temporary storm window can be made by attaching a clear plastic sheet over the outside of the window.



Attach the plastic with strips of wood and small nails.

PUERTAS

LAS PUERTAS SON OTRA FUENTE
DE ESCAPE DE AIRE



Aire puede penetrar alrededor de la puerta

Primero verifique que la puerta está en su marco. No deben haber rajaduras grandes.

'Weatherstrip' las rajas

El 'weatherstripping' viene en fieltro, hule y madera, hule y metal y materiales auto-adhesivos.

Una puerta aislada ofrece aún más protección.

Una puerta rellena con material de aislamiento

'sello de refrigerator seal.'

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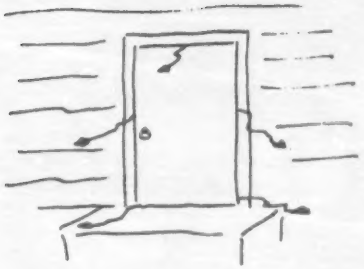
La adición de una puerta de tormenta puede crear un espacio de aire muerto.

DOORS

DOORS ARE ANOTHER SOURCE OF AIR LEAKS.

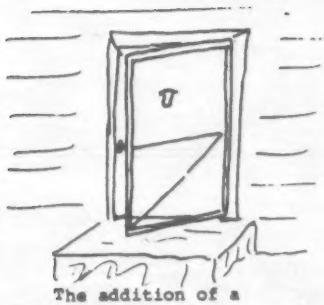


Air can leak in around the door.

First check the fit of the door in its door case. There must be no large cracks.

Weatherstrip the cracks

The weatherstripping comes in felt, wood and rubber, metal and rubber and self-adhering materials.

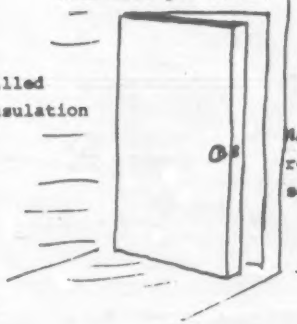


The addition of a storm door can create a dead air space.

An insulated door offers even more protection

Door filled with insulation

Magnetic refrigerator seal.



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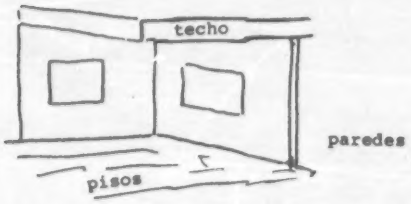
ASILAMIENTO

Las paredes, el techo y el piso deben estar aislados. Como es difícil decir si ya contienen material para aislamiento, es bueno preguntar.

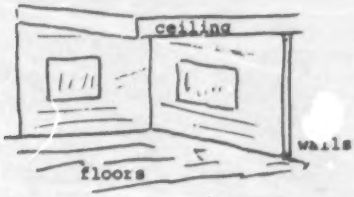


La cantidad de material de aislamiento cada pared debe poseer depende del lugar donde vd. vive.

Material de aislamiento - Mantiene la calefacción durante el invierno.
- Retiene el aire frío en el verano.

INSULATION

The walls and ceiling must be insulated. It's difficult to tell if they already contain insulation, so ask.



Insulation - Keeps in the heat in winter
- Retains cool air in the summer.

The amount of insulation each wall needs to contain depends on where you live.

An R value of R-26 is suitable for ceilings in most of Texas. This is insulation material 9 to 10" thick.

For walls in most of southern Texas, an R-13 value is good. This is insulation that is 3 1/2" thick. For areas north of Austin, an R-19 value is better. This means 6" of insulation, or the standard 3 1/2" of insulation behind foam or reflective sheathing board.

ASI---RECUERDE

Casas y apartamentos con energía eficiente requieren que:

- todos los escapes de aire deben ser tapados.
- el sistema de calefacción debe estar en buen estado de trabajo.
- las paredes, pisos, y techo deben estar aislados.

Los ahorros de energía son cumulativos. Tapando los escapes de aire puede resultar en grandes ahorros.

Busque lugares con energía eficiente donde vivir.

Soo--- Remember

Energy efficient homes and apartments require that:

- all air leaks be plugged
- the heating system be in good working order.
- walls and ceiling be insulated.

Energy savings are cumulative. Plugging the small leaks often leads to big savings.

Look for energy efficiency places to live

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SERIE PARA COMPRAR INTELIGENTEMENTE

CASAS Y APARTAMENTOS CON ENERGIA EFICIENTE

HOJAS DE TAREA

PARA ESTUDIANTES

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SMART BUYING SERIES

ENERGY EFFICIENT HOMES & APARTMENTS

STUDENT
WORKSHEETS

INSTRUCTIONS: 1. FILL OUT THESE WORKSHEETS AFTER READING THROUGH THE INFORMATION BOOKLET.
2. USE THE BOOKLET TO FIND THE ANSWERS IF YOU NEED TO.

LATER YOU MAY BE GIVEN A QUIZ ON THIS INFORMATION

YOUR TEACHER HAS THE ANSWER KEY FOR THESE WORKSHEETS

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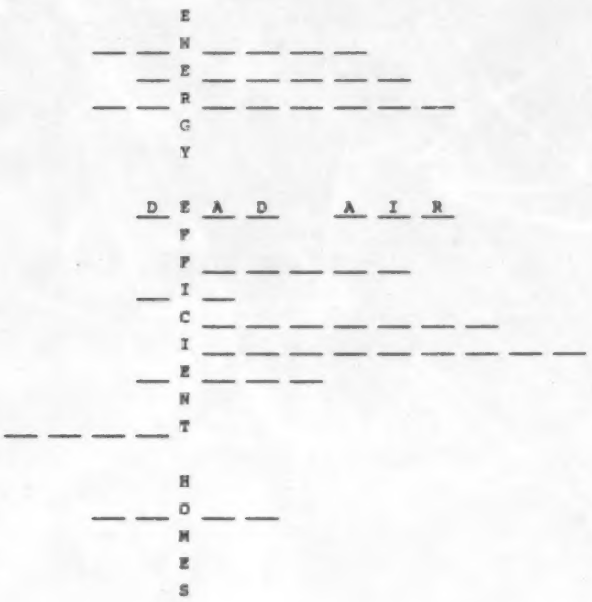
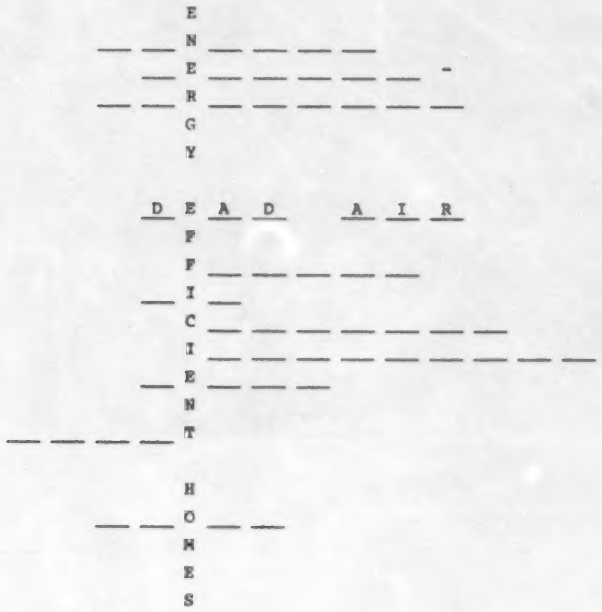
Complete the following word games by filling in the blanks on either side of the letter. The words can be found in the material you have just read.



Do these help?

leaks
caulking
air
filter
doors
dead air
weather-
stripping
windows
insulation
paint

Complete the following word games by filling in the blanks on either side of the letter. The words can be found in the material you have just read.



Do these help.

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PREGUNTAS DE LA HOJA DE TAREA

1. Enumere 3 lugares donde el aire se puede escapar con las ventanas y la puerta cerrada.
   a.) _____
   b.) _____
   c.) _____

2. Ventanas de tormenta contribuyen a crear _____ un espacio entre estos.

3. _____ entre las rajaduras alrededor de las ventanas, los aisla del exterior.

4. Vidrios que están flojos pueden ser sellados con _____.

5. _____ debe ser localizado en areas que se encuentran libres de escapes de aire para un control de calefacación efectivo.

6. Espacios de aire muerto alrededor de las puertas pueden ser creados con _____.

7. Ventanas de tormenta se encuentran en 2 diseños _____ y _____.

8. Enumere cuatro cosas que hay que verificar cuando Ud. alquila un apartamento que podría afectar el costo de la energía.
   a.) _____
   b.) _____
   c.) _____

Worksheet Questions

1. List 3 places where air can leak out of a room with the window and door closed.
   a. _____
   b. _____
   c. _____

2. Storm windows help create a _____ space between them.

3. _____ pushed into cracks around windows seals them off.

4. Loose panes of glass can be sealed with _____ material.

5. _____ should be located in areas that are free from drafts for effective heat control.

6. A dead air space around doors can be created with a _____.

7. Storm windows are available in two designs _____ and _____.

8. List four things to check when renting a apartment which could affect energy costs.
   a. _____
   b. _____
   c. _____
   d. _____

9. Enumere cuatro lugares dentro de una casa que deberían ser aislados para controlar el uso de energía.

   a.) _____

   b.) _____

   c.) _____

   d.) _____

10. ¿Como están construidas las mejores puertas exteriores de una casa para conservar energía? _____

_____

9. List four places in a home which should be insulated to control energy use.

   a. _____

   b. _____

   c. _____

   d. _____

10. How are the better exterior doors of a home constructed to conserve energy? _____

_____

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QUIZ

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PRUEBA

Conteste "v" para verdadero y "f" para para falso.

_____ 1. Espacios de "aire muerto" frenan el escape de aire de una habitación.

_____ 2. La mayoría de aislantes tienen pequenos espacios de aire muerto.

_____ 3. 'Weatherstripping' es un material suave parecido a la macilla.

_____ 4. 'Weatherstripping' se aplica alrededor de las puertas, y material para sellar, se aplica alrededor de la ventanas.

_____ 5. La ubicación del termostato en una casa debe ser planeado con mucho cuidado.

_____ 6. La condición mecánica del horno es importante para un funcionamiento efficiente.

_____ 7. Una ventana de tormenta provisional puede ser hecha de una hoja plástica transparente.

_____ 8. Ventanas y puertas de tormentas frenan el escape de la calefación cuando crean un espacio de aire muerto.

_____ 9. Los filtros de aire del horno nunca necesitan ser cambiados o limpiados.

_____ 10. Todas las casas tienen ventanas y techos que están bien aislados.

Quiz

True	False	Answer T for True or F for False.
		1. "Dead Air" spaces slow the leakage of heat from a room.
		2. Most insulation has tiny dead air spaces.
		3. Caulking is a soft clay like material.
		4. Weatherstripping is applied around doors and caulking material is applied around windows.
		5. The location of the thermostat in a home must be carefully planned.
		6. The mechanical condition of the furnace is important to efficient operation.
		7. A temporary storm window can be made from clear plastic sheet.
		8. Storm doors and windows slow the loss of heat by creating a dead air space.
		9. Furnace air filters never need changing or cleaning.
		10. All homes have well insulated walls and ceilings.